THE OIL WEEKLY

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The Oil Man's Calendar

FEB. 9–12	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
26–27	American Petroleum Institute, Dallas, Texas.
28	North Texas Oil and Gas Association, Wichita Falls, Texas.
MAR. 5	American Petroleum Institute, Illinois Chapter, Evansville, Indiana.
10	American Petroleum Institute, Los Angeles.
23–25	American Society of Mechanical Engineers, Houston, Texas.
26–27	American Petroleum Institute, Mid-Continent District, Tulsa.
APRIL 9–10	American Petroleum Institute, Eastern District, Pittsburgh.
16–17	National Petroleum Association, Cleveland, Ohio.
21–23	Southwestern Gas Measurement Short Course, Norman, Okla.
21–24	American Association of Petroleum Geologists, Denver, Colorado.
22–24	Petroleum Industry Electrical Association, Shreveport, La.
MAY 13–15	National Gasoline Association, Mayo Hotel, Tulsa.
25–28	American Petroleum Institute, Mid-Year Meeting, Biltmore Hotel, Oklahoma City.
NOV. 9–13	American Petroleum Institute, Chicago.

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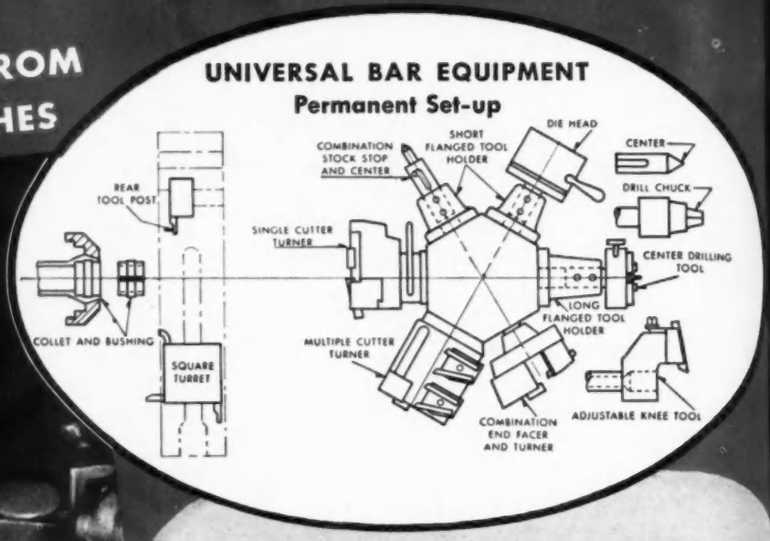

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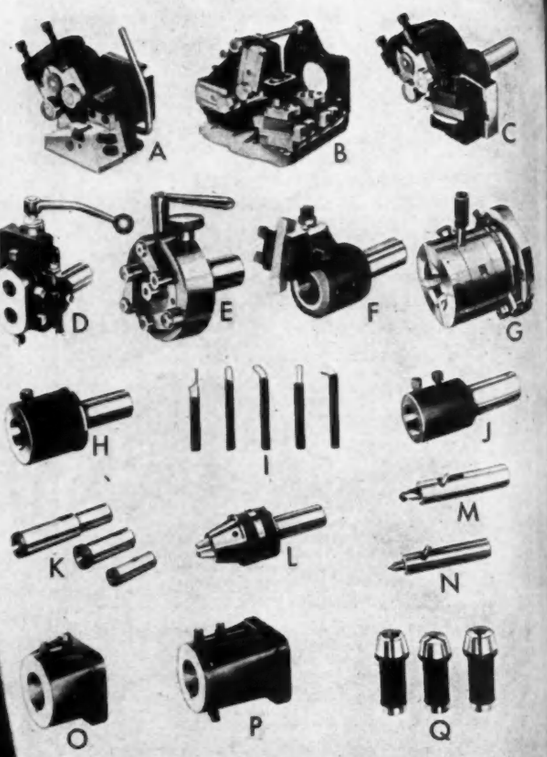

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The Changing Panorama

Exceptions to M-68 Being Approved

Whether Generous Approval Policy Continues Will Depend on Steel

Currently applications for exceptions to the limitations of Conservation Order M-68 are receiving generous approval, but OPC has refused to hazard a guess as to what policy may be necessary beyond the immediate moment.

The steel situation today is not unduly critical, due mostly to the shutting down of the automobile industry, and this permits a generous interpretation which may not be justified a month hence if metal were suddenly needed for some new military project of high importance.

Today, applications are being considered on their merits of offering the possibility of getting needed additional oil. OPC's responsibility, however, goes no further than to forward appropriate recommendations to the War Production Board, where the applications are considered from the viewpoint of the available supply of steel.

If some quick turn in the war program cuts the amount of steel that can be made available to industry, it may be necessary to scrutinize applications more closely from the viewpoint of maximum production with minimum material. Of course, the purpose of the whole effort is to secure the greatest possible volume of production with the use of as little steel as possible.

The OPC Production Division has made a thorough analysis of the possibilities of oil supply and steel conservation all the way from what might happen if it were necessary to cut out drilling altogether to the point where drilling might be permitted to an extent necessary to produce the oil needed and at the same time maintain reserves at their present levels. Neither limit is likely to be ordered, but the whole spectrum has been laid out so that it will be possible at any moment to evaluate the situation as new developments in steel supply and oil demand occur.

Something like 350 to 400 applications for exception to M-68 have so far come into the coordinator's office at Washington, and some already have passed through the mill, been forwarded to WPB and there approved.

Definite figures on the applications received, handled and approved are not available. OPC officials explain that the project is new, and that they have a staff inadequate for the volume of work. Consequently, no attempt has been made to develop statistics as yet. But, it is said, a large proportion of the applications are in process of analysis or between OPC and WPB.

It was estimated that fully 90 percent of the requests handled have been sent over to WPB with OPC recommendation for approval. At WPB, it was said the OPC's recommendations are being accepted and authorization granted practically as fast as the cases come in.

Census . . .

Oil equipment manufacturers will be among the ten thousand manufacturing users of scarce materials that will receive questionnaires with the launching by WPB of the most detailed statistical study of the metals industries ever undertaken.

Designed to show in just what shapes and forms raw materials flow through the productive mechanism, and to demonstrate how much of each is required for that minimum of essential civilian production which must be maintained side-by-side with the maximum military output, the study will also reveal those comparatively unimportant users which are still draining away metals and fabricating facilities needed in the production of weapons of war.

Uses of more than 250 shapes and types of metals are to be reported on by the manufacturers receiving the questionnaire. The Bureau of Census, on behalf of WPB, will tabulate the returns on the basis of which will be made decisions governing distribution of critical and strategic materials during the quarter beginning April 1.

Interpretations of Orders Needed

Misunderstandings Causing Extra Work for OPC And Industry

The great confusion that has arisen over interpretation of some provisions of Conservation Order M-68 and Preference Rating Order P-98 has shown that there is need for official clarification of many angles.

The industry would certainly welcome such information. And now it is learned that the handling of requests for exceptions to the two orders has demonstrated to OPC and WPB the need for clarification of many phrases. Representatives of the two groups are working on the matter. It is the hope of the coordinator's office that this will result in an interpretation sheet settling all questions which may arise in connection with the two orders, and thereby speed up their handling.

However, it appears doubtful if an interpretation sheet could cover all the varied questions that will arise from the industry's peculiar operations from time to time. Some means should be devised whereby information relative to questions that arise fairly frequently are made public at timely intervals. This would save OPC much time, not to mention that of the oil operators. If someone with OPC or WPB would merely clarify problems as they arise, the information would be helpful. The trade publications would serve admirably as a means of getting the information to the industry as quickly as possible.

Countersignature Stays . . .

The awaited elimination of the requirement that OPC district heads countersign all Preference Rating Order P-98 applications will not be forthcoming. That is the latest report coming from Washington, and is further indication that the restrictions imposed upon the oil industry were not written entirely with the view of

facilitating procurement of equipment, as many had hopefully believed when they were first issued.

The story is that when a member of OPC and a member of the new industry operations division of WPB told a revision board that the requirement of OPC district head countersignatures was delaying delivery of equipment they received a reply something like this: "That is fine."

Expected Developments . . .

Unconfirmed reports have it that a big shakeup is coming in the government oil control setup.

A salt water order, according to rumors, is being kicked around Washington, which would shutin all East Texas wells producing over a stipulated amount — asserted to be a small percentage of the daily oil output.

Inauguration next week by one of the large purchasing companies of a policy whereby its crude runs from all West Texas and Lea County, New Mexico, will be cut to 77½ percent of the daily allowable of wells, probably is the forerunner of widespread pipe line proration in the Permian Basin sour oil belt. During January a considerable quantity of the production from the region went into storage.

Dividing the Work . . .

A series of clinics to show small manufacturers how they can turn their facilities to war production will be held by the War Production Board in various sections of the country. Three of these clinics have been held to date, all in the New England States. As the schedule develops, dates and locations for others will be announced.

The purpose of these informal meetings is to create a setting for negotiations between prime contractors and prospective sub-contractors. Contractors will be assisted in finidng additional manufacturing facilities. Small manufacturers will be educated on how their own tools may be put to use in turning out different parts needed in the war program.

Insofar as possible the clinics will be scheduled in sectional groups.

At the recent Lowell, Mass., clinic, more than 5000 representatives of small business in four states availed themselves of the opportunity offered to consult with prime manufacturers with a view to obtaining sub-contracts. It is estimated as many as 20,000 contacts were made between prime contractors and small manufacturers. Approximately 10,000 square feet of space was devoted to booths at which 39 prime contractors exhibited the many different articles which small manufacturers might produce for them. A large bulletin board, near the main entrance, listed the names of the prime contractors and the different items, largely products of machine work, for which they were in the market. A spokesman for each prime contractor explained over a loudspeaker system what his company had to offer the small contractors. Officials of the War Production Board and other federal agencies were present to advise and assist in negotiations for work.

Keep Plans at Home . . .

Oil men traveling outside of the United States are affected by a request of the Treasury Department for cooperation in the enforcement of section 3 (c) of the Trading with the Enemy Act which prohibits, except under license, the carrying of any form of tangible communication into or out of the country. The Treasury advises travelers to refrain from carrying on foreign trips any documents unless they are absolutely essential. Such essential documents, including maps, plans, specifications, etc., should be presented to the office of the Collector of Customs where the matter of license will be determined.

Specialists . . .

An important trend of industry has been the large growth in number of consulting engineers and geologists and the equal increase in number and types of service companies.

The value of engineering work, both geological and mechanical, has become well recognized. All large companies now employ engineering staffs, but the industry has numerous small operators with so few wells that it is not feasible for them to increase their overhead burdens by employing technically trained men. Yet there are occasions when these small operators need technical advice. The expansion in number of petroleum consulting engineers and geologists during recent years, makes it possible for small operators to procure engineering services on a part-time basis or whenever needed. This has materially increased the efficiency of operations. Large companies also have found consulting men of help, in procuring appraisals from outside sources and where experts in specific work, such as water flooding, are required only part-time.

The growth in number of service companies has been of equal importance to large and small operators. Many operators now depend upon service companies for such routine operations as cleanout work and numerous other field activities that were unattainable a short time ago. Investment costs are reduced, and the service companies provide trained crews and proper equipment that otherwise might not be possible for the operator to have.

Soap From Petroleum . . .

With the almost certain curtailment of coconut oil shipments from the Far East, a shortage of natural soap-making oils looms. But as with rubber, this influence of the Far East war probably can be retarded by the petroleum industry.

Dr. Martin H. Ittner, announcing the development of a new petroleum-soap process, said that "at one time or another we have all had visions of making soap from petroleum," but that all the petroleum-base soaps made up to the present have been dark, evil-smelling, and with poor washing qualities. The new process, however, chemically changes the undesirable portions of the petroleum soap into good soap-making fatty acids, and at the same time improves the odor.

High Gasoline Use . . .

A surprising maintenance of motor-fuel demand is indicated by East Coast gasoline statistics. Although Atlantic Coast refineries increased their output of gasoline 8 percent during the four weeks ended January 31, stocks of finished and unfinished gasoline decreased slightly (350,000 barrels) during the period. Increasing use of motor vehicles by military services has been a factor, but of greater importance no doubt has been heavier traffic to war industry plants.

Washington Roundup

OPC recommends pooling of all East Coast products . . . Petroleum prices frozen at October 1 levels . . . Expect changes in OPC setup . . . Industry Council report asks higher prices, allowables and depletion allowance

By B. F. LINZ, Washington Correspondent

SUBMISSION to the Petroleum Industry War Council of a report in which it was held that higher crude prices and an increase rather than a reduction in the depletion allowance were essential to continued discovery of needed new oil, almost coincidentally with issuance by the Office of Price Administration of an order formally setting the October 1 posted price as the maximum under the new Price Control Act, brought the price question to the fore in Washington last week.

The report was submitted to the two-day February meeting of the council, in which the OPA order, and the deficiencies in the WPB orders—M-68 and P-98—shared attention with the tightening supply situation on the East Coast, the need for expanded aviation gasoline production and the possibilities of rationing.

But it was learned during the week that when rationing comes it likely will apply to heavy industrial oils and light heating oils rather than to gasoline. The situation in heavy industrial oils is particularly disquieting, the storage position on the East Coast having deteriorated seriously during the past few weeks.

Sharing attention with the council was the rumor that Donald Nelson's War Production Board was about to absorb the Coordinator's office, but as the week drew to a close doubts were raised as to the authenticity of the report, particularly as the Budget Bureau at the moment was approving staff expansions and other expenditures for the OPC.

In a move to take the curse off the countersignature requirements of P-98, Coordinator Ickes assigned a man to Tulsa, to countersign orders for operators in Kansas and Oklahoma, a move seen as possibly indicative of the establishment of a permanent office at some point in the Mid-Continent area in the near future.

Several orders revising M-68 and P-98 are "in the mill." Among them an order applying the conservation limitations of the former to the world so as to prevent export of materials which might be used for unnecessary purposes; a revision of the well-spacing requirements, and a lifting of the 640-acre restriction for gas wells in certain Eastern areas.

Pooling

Moving in an effort to counteract the increasingly difficult supply situation along the Atlantic coast, Deputy Coordinator Davies over the week-end issued a recommendation (No. 33) contemplating that companies operating in the area shall pool their products and take such other steps as may be necessary to assure the "equitable spreading" of available oil.

Davies explained that his action had been asked by the industry, as a result of tanker sinkings and diversions, to allow them to take steps to meet any difficulties that might arise.

The order authorized the appointment of a 16-member industry sub-committee on supplies and distribution, which will be charged with the specific task of obtaining the distribution of available supplies in a manner that will assure the filling of all military, war industry and essential civilian requirements. The sub-committee will be appointed by the general committee for District No. 1, subject to approval by Ickes or Davies.

The deputy coordinator said the sub-committee would have four main functions:

To obtain, analyze and keep current all pertinent facts and figures concerning stock inventories and demand for petroleum products in District No. 1.

To coordinate, arrange for and, after approval by the chief counsel and subject to the direction of the coordinator, carry into effect the sale, exchange and loan of petroleum and petroleum products among the various marketers and suppliers so as to speed and assure the distribution of available supplies to meet military, war industry, and essential and reasonable civilian requirements in that order.

In emergency cases, where found necessary by the district marketing director and subject to his direction, to make temporary arrangements for distributing and division of incoming supplies and existing inventories in a manner that will assure the meeting of war, defense and essential civilian needs as they arise.

In the event action so taken is found by the district marketing director to be inadequate, to devise plans "for the exchange, loan, sale, lease, or pooling of petroleum and petroleum products, and of production, transportation, refining and storage facilities wherever and to whatever extent may be necessary." Such plans would have to be approved by the OPC chief counsel before being put into effect.

Price Control

Crude oil prices posted on October 1 were formally made the maximums to be paid for oil February 3 in the first order affecting the industry to be issued under the provisions of the new Price Control Act by Administrator Leon Henderson.

The order, effective at once, also

OPA's New Crude Price Schedule

That section of the Office of Price Administration Price Schedule No. 88 applying to crude oil (refined product section omitted) is published in full below:

(A) **Crude Petroleum.**

(1) The maximum price at the well for crude petroleum shall be the posted purchase price as of October 1, 1941, for the pool in which any given well is located; **provided,** that where a contract was in effect on October 1, 1941, for the purchase of crude petroleum at the well in excess of the posted purchase price for the given pool, such contract price shall be the maximum price at the well for any given well for the production covered by the contract, or any renewal of such contract, or a new contract between the same buyer and seller concerning the production from the same well.

(2) Where, on October 1, 1941, there was in any given pool more than one posted purchase price or no posted purchase price, the maximum price at the well for crude petroleum shall not be, for any given well, in excess of the price paid for crude petroleum from that given well as of October 1, 1941, unless this price is below the lower or lowest of the posted purchase prices if any, and in that case the maximum price shall not be in excess of such lower or lowest posted purchase price: Provided, that where a contract was in effect on October 1, 1941, for the purchase of crude petroleum at the well in excess of the posted purchase price for the given pool, such contract price shall be the maximum price at the well for any given well for the production covered by the contract, or any renewal of such contract, or a new contract between the same buyer and seller concerning the production from the same well.

(3) Where a well was a producing well on October 1, 1941, but did not actually produce any crude petroleum on that date, the maximum price for crude petroleum at such well shall be subject to paragraph (4) (II) (A) below, provided, that, however, where the price cannot be determined by this paragraph then the price shall be governed by paragraphs (1) and (2) below.

(4) Where a well was a shut-in well on October 1, 1941, and is subsequently reopened, or where a new well is completed subsequent to October 1, 1941, the maximum price at the well for crude petroleum produced from such well shall be determined as follows:

(I) Where there was only one purchase price posted as of October 1, 1941 for the pool in which the well is located, such posted price shall be the maximum price at the well for crude petroleum produced from the well in question.

(II) Where there was more than one purchase price posted as of October 1, 1941 for the pool in which the well is located, and

(A) Where the location of the new or reopened well was included in the same lease with one or more producing wells on October 1, 1941, the posted price applicable to those producing wells on October 1, 1941, shall be the maximum price at the well for crude from the new or reopened well.

(B) Where the above provision does not apply, the highest price posted as of October 1, 1941 for the pool in which the well is located shall be the maximum price at the well for crude from the new or reopened well.

(III) Where there was no purchase price posted as of October 1, 1941 for the pool in which the well is located, a purchase may set a temporary price for crude petroleum produced from the new or reopened well, subject to the provisions of Section 1340.154 above. This provision covers wells representing discovery and development of new pools subsequent to October 1, 1941.

(5) The maximum prices for crude petroleum purchased at points other than at the well shall be at no greater differentials at such points over the maximum price for such crude at the well than existed on October 1, 1941.

(B) **Petroleum Products**

This section is omitted from this reproduction in THE OIL WEEKLY.

(C) **Specific Prices**

The following specific prices shall be the maximum prices for the items named at the points enumerated, notwithstanding paragraphs (A) and (B) above:

(1) Crude Petroleum.

Pennsylvania Grade

The maximum prices at the well for Pennsylvania grade crude petroleum shall be those established in Price Schedule No. 22[1]*—Pennsylvania Grade Crude Oil (Sections 1340.21 to 1340.29 this chapter).

North and North Central Texas and Oklahoma

The maximum price at the well for crude petroleum of 40 degrees gravity and above, determined by the American Petroleum Institute method, produced in Archer, Baylor, Brown, Callahan, Clay, Coleman, Comanche, Cooke, Eastland, Fisher, Foard, Haskell, Jack, Jones, Montague, Palo-Pinto, Shackelford, Stephens, Taylor, Throckmorton, Wichita, Wilbarger, and Young Counties, Texas and in the bed of the Red River in Tillman County, Oklahoma, shall be $1.21 per barrel with the customary differentials for lower gravity crudes.

Louisiana

The maximum price at the well for crude petroleum of 40 degree gravity and above, determined by the American Petroleum Institute method, produced in the Caddo Pool in Louisiana, shall be $1.20 per barrel with the customary differentials for lower gravity crudes.

Oklahoma

The maximum price at the well for crude petroleum of 40 degrees gravity and above, determined by the American Petroleum Institute method, produced in Carter County and in the Healdton and Oscar Pools in Oklahoma shall be $1.25 per barrel with the customary differentials for lower gravity crudes.

made maximum the lowest prices quoted for products on October 1, this change from the November 7 level adhered to at the request of the Office of Price Administration being explained by Henderson as designed to bring the base into conformity with provisions of the Price Control Law which require that consideration be given to prices prevailing between October 1 and 15, 1941, in the fixing of ceilings.

It was provided in the order that special situations, covered in specific agreements and price schedules already in effect—such as the three tenths cent advance in gasoline prices in the East and South—would be protected.

In issuing the order (Price Schedule No. 88) Henderson stressed the necessity for maximum prices during the war period, declaring that inflationary increases in the price of petroleum and products not only would be multiplied in the whole structure of costs and prices, but would also directly increase the cost of living and the cost of supplying the armed forces.

OPA explained that price stabilization in the industry was initiated on the basis of informal agreements between the agency and the industry. The increasing scope of control and the growing multiplicity of informal agreements and understandings, however, made it desirable that they be consolidated into a single formal schedule, which will serve the dual purpose of clarifying the price policies of OPA and protecting the industry and the public from the effect of unwarranted price increases.

The schedule covers all types of petroleum and products with the exception of asphalt, industrial lubricating oils, industrial naphthas and solvents, greases and specialty products such as household oils and spot removers.

The maximum prices established include those on all domestic, export and import transactions, sales, transfers, exchanges or purchases of crude, and on all domestic, export and import transactions, sales, transfers of petroleum products, involving contract, bid or spot sales of crude at the well, the gathering point, tank farm or terminal and of products for cargo or barge shipment, harbor, refining, terminal, tank car and tank wagon delivery.

The posted prices for crude on October 1, last, are established as the maximum prices, except that if premiums were being paid under

[1] 6 F.R. 4324.

contracts on that date premium payments still will be allowed.

In addition, the schedule confirms previously approved prices for crude in North and North Central Texas, Southern Oklahoma and one location in Louisiana. Pennsylvania-grade crude prices are covered by Price Schedule No. 22, announced some time ago.

Reserve Needs

Adequate crude prices, increased production allowables and retention of the depletion allowance of the Revenue Act are basic essentials to the discovery of new oil, it was declared February 4 in a report of the special committee appointed by the industry council to study ways and means of increasing crude reserves and preventing premature abandonment of small wells.

While today the country is well provided with proved reserves and daily productive capacity, the committee found, there are a number of factors of less satisfactory nature which must be dealt with if the industry is to produce the oil necessary to win the war.

Calling attention to the fact that since 1937 annual additions to reserves through new discoveries and revisions and extensions to old fields have become smaller each year, the committee warned that "the declining rate of additions to total reserves is rapidly approaching the amount currently being withdrawn as production, and unless this downward trend is reversed the total of new discoveries and revisions and additions to old fields can be expected to fall below annual crude oil requirements.

"With possible increased demand for petroleum due to the war effort," the report added, "such a trend is undesirable. Much time and effort have been spent by the industry and others in an effort to build crude oil reserves and potentialities to produce to such an extent that the optimum rate of production of crude petroleum may at least equal, if not exceed, the total crude oil requirements of the country. Prolonged decline in reserves would make more difficult the application of accepted good practice in the production of our crude oil requirements."

Since the number of dry holes drilled for each major field discovered is increasing steadily, the protection of reserves runs into the question of steel supplies, but the committee did not touch upon that point except to cite the increased cost of discovery which, it pointed out, can be met only through a crude price which will permit an operator to secure a return of his expenditures. Declining prices were cited as having a definite effect upon new drilling, while advancing prices acted as an encouragement.

Abandonment Study

Similarly, price changes are reflected to considerable degree in abandonments, other important factors being the condition of the reclaimed materials market and whether the price of recoverage equipment as used material, or as junk, exceeds the value of the well as an operating unit, all in relation to the capabilities of the well as a producer or as an economically justifiable operation.

"Placing restrictions against an operator abandoning a well which he no longer deems an economic operation would not prevent the operator from discontinuing to pump his well but it would have the effect of prohibiting him from salvaging the material in order to use it elsewhere," the committee commented. "Although only limited quantities of salvage material are suitable for new and deeper wells, this would to a degree defeat the purpose intended in that the material would then be frozen in the ground with no oil being produced through the use thereof. Such restriction would be artificial and would operate against normal economic forces and conceivably would withhold from oil field supply markets materials which might possibly have been used in the finding elsewhere of considerable additional new oil reserves."

The committee was unable to determine the amount of reserves generally involved in the question of abandonments, but concluded that the overall figure was not large, "and perhaps not greater in relation to total reserves of the country than is the production involved in relation to total production of crude oil."

Conclusions

On the basis of these findings, the committee reported that it had reached seven conclusions, as follows:

"1. That additions to the nation's known oil reserves have shown a declining trend for the past three or four years.

"2. That new reserves are needed in order to meet indicated consumptive demand without waste.

"3. That there is an indicated trend of increased abandonment of small wells.

"4. That an increased number of wells must be drilled in order to discover the same amount of oil as formerly.

"5. That premiums granted discovery wells in the form of increased allowables are an incentive to exploration.

"6. That adequate prices of crude oil, which give consideration to overall costs, are essential to exploration incentive and to extend the economic life of small wells.

"7. That retention of present statutory percentage depletion allowance is essential to the above objectives."

Greater sums than in the past must be expended for exploration if oil reserves are to be increased or even maintained, the committee held, and the industry is seen as qualified and prepared to increase its exploratory effort if given the incentive to venture and the availability of venture money.

The incentive, it said, can be supplied by prices for crude adequate to cover all operating and discovery costs and taxes.

"The industry relies upon the overall difference between cash income and cash outgo to provide the funds for exploration," it pointed out. "Exploration is a controllable expense. In a broad sense that amount remaining after meeting all other expenses is allocated to exploration. With constantly increasing tax levies such remainder correspondingly decreases. Tax assessments are in fact direct charges against funds otherwise available for exploration.

"The present percentage depletion allowance embodied in the tax laws is a modification of the original discovery depletion allowance, adopted 24 years ago as an incentive to stimulate discovery and development of the petroleum resources of the country. The oil industry of today stands as a tribute to the wisdom of the Congress and its tax making bodies in that it has been ever ready to meet the rapidly increasing demands of the nation, and with lower prices for its products over that period. It can be demonstrated that the establishment and application of the principle of depletion allowance in determining income tax has been one of the most effective motivating forces in establishing the

present levels of crude oil reserves.

"In view of the present emergency, and in consideration of the downward trend of new discoveries against increasing demand, suggestions of the Treasury Department that percentage depletion be reduced are shortsighted and show a complete lack of appreciation of the imperative need to maintain the incentive to find new oil, which results from this provision. An increase in this allowance would be wiser overall governmental planning.

"Similar conclusions can be reached with respect to the problem of extending the life of marginal wells. Incentive provided by increased prices or anticipation of higher prices serves to encourage the operator to continue wells even after their economic limit has been reached. Statutory percentage depletion allowance also serves to retard abandonment of these small wells."

OPC Changes

A major shift in the war-time control of the oil industry was rumored last week to be impending, but in several official circles brows were raised over the report that Donald Nelson was about to seize the OPC and put it under his War Production Board.

The report that Nelson would sign the necessary order as soon as he found a man to head the work, however, coincided neither with his statement when he took over the WPB chairmanship, that Ickes would continue to handle oil, nor the expansion of the OPC which currently is under way.

There is no doubt, however, that a closer liaison between the OPC and WPB is in the making, a move felt by many in both organizations as well as men in the industry to be highly desirable.

While oil men gathered for the monthly sessions of the industry council, hereafter to be known as the industry "war council," the OPC was adding men to its staff in an effort to clear up the blacklog of applications and other work which has accumulated.

At the same time, the leadership of the OPC is in process of revamping, with Robert E. Allen, director of production, moving up to become assistant to Deputy Coordinator Ralph E. Davies, who for weeks has been badly overworked. Donald R. Knowlton, who recently came into Allen's office from Phillips Petroleum, will take over as director of production.

The reports on the shift of the oil agency had it that Donald Nelson was acting to streamline the oil administration and would move to some point in the Mid-Continent field those divisions which have to deal directly with operators, cutting the time and red tape now required for the handling of applications and the solving of the problems which arise from day to day.

Nelson's decision to revamp the control set-up was said in some quarters to be attributable to clashes between the coordinator's office and the late Office of Production Management, particularly over the terms of Conservation Order M-68, but responsible officials of both agencies said relations were improving and matters were being handled more expeditiously.

Oil men discussing the reported change pointed out that President Roosevelt's order setting up the WPB gave Nelson authority to take over any Government activity he deemed necessary, and maintained that that authority was more potent than the President's letter appointing Ickes as coordinator.

They explained that the desirability of a merger of the oil activities of the defense program has been advanced for some time as a means of eliminating the delays and duplication of effort inevitable when authority is divided.

DONALD R. KNOWLTON

who recently joined OPC is slated to be director of production as R. E. Allen moves up to the position of assistant deputy coordinator. Knowlton, a believer in wide spacing, cooperative operations, reservoir pressure maintenance and other conservation principles, had a career as an oil geologist interrupted by the war and a return to school to study engineering. He occupied his first engineering position in 1923. His association with Phillips Petroleum Company began in 1926 as a petroleum engineer. From this point he moved upward to assistant chief engineer in 1931, to chief engineer in 1933 and to general production superintendent in 1936. He continued in this position until leaving to join the OPC.

Under the original procedure, the OPC acted first on priority applications, which then had to go to the Office of Production Management and later the War Production Board for final action. In the latter agency there are probably a half-dozen sections with an interest in, if no authority over, oil, and clashes between the two offices occurred when conservation policies were in the making.

But despite the rumors, the OPC continued to speed up its handling of applications and in addition to the personnel changes will shortly open a branch of the Chicago headquarters, in Oklahoma, to give Mid-Continent operators quicker action.

PD-1A

New PD-1A forms, on which ratings assigned to applicants may be extended to suppliers and subsuppliers, became available in limited number this week but will not be generally available until about the middle of the month and their use will not become mandatory until March 2.

The PD-1 form which is made obsolete may be used until March 2, but the ratings thereon will not be extendable.

The extension of ratings is most important change, but another amendment permits the recipient of an individual rating under the new form, and his suppliers and subsuppliers, to employ that rating for replacement in inventory of materials used in filling the rated order, provided such replacement does not increase inventories above a practicable working minimum.

The PD-1A form is for use by operators in all branches of the industry, supply houses, manufacturers or anyone desiring a preference rating for the purchase of material for any purpose. Heretofore, ratings on the old PD-1 forms have not been extendable under any circumstances.

With the new form, when an individually rated order is served upon a supplier by the original applicant, the rating may be extended by the supplier, by his suppliers and sub-suppliers to obtain any material which will be delivered to the original applicant, but in no instance can the rating be used to obtain machinery or capital

[*Continued on page 56*]

Demand Rates Likely To Be Better Than Anticipated

By L. J. LOGAN, Associate Editor

CIRCUMSTANCES indicate that demand for petroleum in 1942 may exceed the record-breaking demand of 1941 unless this year brings either or both a shortage of tanker transportation or a rationing of oil supplies by the government as a war-time conservation measure; although those two potential retarding influences are very real threats which conceivably may hold demand to about the same proportions as in 1941 or cause an unpredictable reduction.

This prospect of an increase in demand if transportation difficulties and rationing do not appreciably interfere is based on the following indications: (1) exports will be materially increased, in aiding war allies; (2) military and industrial requirements of gasoline, lubricants, heavy fuel oils and some other products will be greater than in 1941, because of active participation in the war and accelerated production of war equipment; (3) civilian use of gasoline may equal or exceed that of 1941, despite the shortage of tires and the virtual cessation of sales of new automobiles for civilian use, and (4) demand in the first months are certain to be greater than in 1941 and may offset any slump in the last half.

That exports will be increased seems a safe assumption, as military operations in 1942 likely will call for substantially larger shipments of oils to Great Britain, China, and Russia; while Allied reverses in the Far East may make it necessary for the United States to supply oils that have been furnished so far by the Netherlands East Indies.

Also fairly certain to materialize are the indicated increases of industrial and military use of gasoline, lubricants, and heavy fuel oil, concurrently with the stepping up of production of war equipment and supplies.

The above statement that civilian use of gasoline in 1942 may equal or exceed that in 1941, despite unavailability of new tires and new automobiles, is based on careful evaluation of the possible effects of those two handicaps.

Gasoline Demand to Be Affected by Lack of New Automobiles

Four Fifths of Normal Sales of Automobiles and Trucks Represent Replacement of Old Vehicles Scrapped, and One Fifth Provides Addition to Number in Use.

But in 1942, with production drastically curtailed, scrappings will exceed sales and cause decrease of vehicles in use.

(Data from Automobile Manufacturers Association from 1931 through 1940; figures for 1941 and 1942 estimated.)

YEAR	New Vehicles Sold at Retail	Old Vehicles Scrapped	Increase or Decrease of Vehicles in Use
1931	2,231,276	2,973,279	+ 742,003
1932	1,285,130	2,515,231	— 1,230,101
1933	1,786,679	1,654,369	+ 132,310
1935	3,419,028	2,184,081	+ 1,234,947
1936	4,163,032	2,418,898	+ 1,744,134
1937	4,152,709	2,588,604	+ 1,564,105
1938	2,344,731	2,339,571	+ 5,160
1939	3,244,278	2,400,289	+ 843,989
1940	4,095,984	2,600,000	+ 1,495,984
10-Year Average	2,908,144	2,338,661	+ 569,483
1941	4,667,233	2,650,000	+ 2,017,233
1942	None	*1,600,000	*— 1,600,000

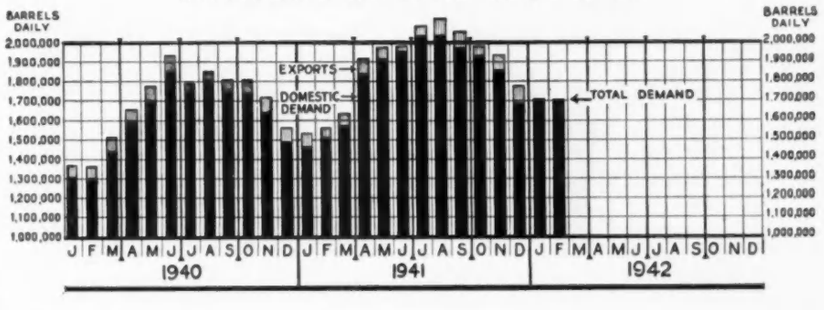
* Possible low figure to which scrappings may be held, in view of urgent need of prolonging use of old vehicles.

Tires commonly have been used with safety for 15,000 to 25,000 miles, or from 2 to 3 years, on the basis of the average driving of an automobile a little over 8000 miles per year. But many tires have lasted for 50,000 miles, and with more careful driving and retreading, present tire equipment probably can be made to serve generally for 1 to 1½ years without many vehicles being forced out of use. Consequently, tire difficulties of 1942 may not make any conspicuous dent in the use of gasoline.

Similarly, lack of new cars for replacing worn-out vehicles may not bring about in 1942 much if any reduction in the average number in use, as compared with the average number used in 1941. For the scrapping of cars and trucks in 1942 doubtless will be held to a minimum, and the junkings probably will take off the streets and highways fewer vehicles than were gained, over and above scrappings, during 1941. In 1941 there was a build-up of about 2,000,000 in the number of vehicles in use, as 4,667,233 cars and trucks were sold at retail, while 2,650,000 were scrapped. In 1942 there must be a pulling down in the number of cars in use to wholly or partially cancel the 1941 build-up, with vehicles not being made yet being scrapped. However, even in normal and prosperous years, recently, only 2,400,000 to 2,600,000 cars and trucks have been scrapped annually, or relatively few more than the 2,000,000 net gain in 1941. With car scrappings cut in 1942 by one fourth below the high rate of 1941, it would be possible to hold the junkings of the year equal to the build-up of the previous year and thereby maintain about unchanged the average number of cars in use for the two years.

Even sharper cutting down of

Demand for Gasoline Greatest in Third Quarter, But Good Just Before and After That Period



Seasonal Variations in Daily Average Demand for Motor Fuel

Curtailment of Motor Fuel Use Expected To Be More Pronounced in Third Quarter Than in Other Periods of 1942, as Tire Shortage and Oil Transportation Difficulties Threaten to Discourage Long Vacation Trips.

However, comparatively large demand for motor fuel in months immediately before and after vacation season indicates that summer's large requirements may be due as much to favorable weather and long daylight hours as to unusual driving on long trips during vacations.

(Thousands of Barrels Daily)

	1939			1940			1941			1942
MONTH	Domestic	Exports	Total	Domestic	Exports	Total	Domestic	Exports	Total	Total Demand
Winter Quarter:										
January	1,221	117	1,338	1,302	73	1,375	1,463	66	1,529	1,706
February	1,236	104	1,340	1,295	66	1,361	1,509	49	1,558	1,703
March	1,371	140	1,511	1,439	73	1,512	1,568	66	1,634	....
Spring Quarter:										
April	1,466	122	1,588	1,589	69	1,658	1,837	76	1,913	....
May	1,598	142	1,740	1,708	64	1,772	1,907	71	1,978	....
June	1,660	149	1,809	1,849	86	1,935	1,947	42	1,989	....
Summer Quarter:										
July	1,629	116	1,745	1,738	54	1,792	2,035	46	2,081	....
August	1,733	139	1,872	1,785	67	1,852	2,030	87	2,117	....
September	1,645	141	1,786	1,743	64	1,807	1,970	83	2,053	....
Fall Quarter:										
October	1,603	110	1,713	1,736	69	1,805	1,926	65	1,991	....
November	1,576	85	1,661	1,636	74	1,710	1,850	83	1,933	....
December	1,409	101	1,510	1,497	64	1,561	1,684	90	1,774	....

scrappings probably will be achieved, with a total for the year as low as 1,600,000 apparently possible, judging by the experience during the depression, when it was necessary to stretch out the life of cars and trucks. (Only 1,654,000 vehicles were scrapped in 1933 and 1,712,000 in 1934.) This indicates that the average number of cars in use during 1942 possibly could be about 200,000 larger than the average for 1941.

The above calculations embody no allowance for making of new cars, whereas manufacturers have made and will continue to make some passenger cars and trucks for public welfare as well as military use, with 100,000 to 200,000 passenger cars per year currently mentioned as possible minimum production for the non-military but highly essential public welfare use, even under the most drastic curtailment program that may be adopted.

Almost certainly, neither the tire situation nor the lack of new cars will keep gasoline consumption for the first half of 1942 from materially exceeding that in the corresponding period of 1941; and the indicated increase for the first 6 months helps to assure a comparatively favorable showing for the year as a whole.

However, it is anticipated that the third quarter of 1942 may bring a pronounced flattening of the trend of domestic demand for gasoline, and that the period may make a relatively poor comparison with that of 1941. This expectation is based on the assumption that vacation trips will be discouraged by the shortage of tires and on the possibility that the shortage of tankers may necessitate some degree of rationing of gasoline on the Atlantic Coast and perhaps in the Pacific Northwest during the summer and fall periods, when demands upon oil shipping will be seasonally heavy.

It is possible that the importance of long vacation trips on gasoline consumption may be generally over-emphasized. Cross-country trips on vacations are rare as compared with those of a few hundreds of miles or less, which will be taken as usual in many instances in 1942, without great concern over the wear on tires. Furthermore, vacation travel as a whole may be overrated as a tonic to gasoline consumption; for demand progressively increases in April, May and June, in advance of the peak of vacationing in July, August, and early September, while the demand tapers off only gradually during September, October, and November, before dropping to the yearly lows of January and February. Apparently, therefore, the principal deterrents to use of automobiles are the ice, snow, rains, and short daylight hours of winter; and conversely, outstanding stimulants are the favorable weather conditions and long daylight hours of summer; with consumption of gasoline in spring and autumn at medium levels, in reflection of the transitions between the extreme weather conditions. Summer affords, of course, the advantage of any extra driving on the vacations, although many of the shorter vacation trips represent only the duplication or equivalent of similar trips made on week-ends or holidays outside the regular vacation season.

All factors considered, it appears that the most serious immediate threat to petroleum consumption in 1942 is the scarcity of tankers for maintaining the flow of oils from the Gulf Coast to the East Coast and from California to the northern section of the Pacific Coast.

This threat has been emphasized by sinkings of American tankers off both the Atlantic and Pacific coasts, by the recent revelation of government authorities that approximately 25 tankers would be transferred from the Atlantic to the Pacific coast for service of undisclosed nature, and by the obvious fact that an increased number of American tankers will be taken out of domestic service for moving oils to all parts of the world for use of American and allied military forces. Sinkings by submarines caused the loss of seven tankers off the Atlantic coast within a few days in mid-January, and two were sunk off the Pacific shores in December. Steps have been taken to protect tankers on both coasts, and they may be expected to entail some slowing down of shipments. But on the other hand, diversion of tankers from commercial to military service and slowing down of boats by submarines will be compensated, in so far as civilian consumption is concerned, by continued heavy building of new tankers, enlarged pipe-line transportation facilities as compared with last year, and current resumption of heavy shipments by rail.

Of less importance immediately but perhaps more important in the long run than tanker transportation, is the possibility of rationing as a means of assuring supplies for the military. For it now is indicated that difficulty may be encountered in supplying full civilian and military requirements, with shortages of materials preventing normal drilling and maintenance of crude reserves and also preventing normal maintenance and expansion of refining facilities.

Strategic Location of Wells

in Flank Sands on

Piercement-Type Salt Domes

THE military requirements of the emergency have placed increasing demands upon the oil industry for certain types of oils, from which can be obtained such products as aviation gasoline, bunker C fuel, and diesel fuel. The productive salt domes of the Gulf Coast of Texas and Louisiana are located within the geologic belt that provides sources of these types and therefore should be developed in the manner that will enable them to produce their portion of these additional needs.

The problem of the operators of flank sands of salt domes is to establish a program that will quickly furnish a maximum amount of preferred type of oil to assist in supplying the present demand, and then by the discovery of new reserves, provide for continuance of this supply over a long period. All the above must be obtained with a minimum use of essential materials, particularly those which are non-recoverable. Such a program will necessarily require a study to determine which particular sands of each salt dome will most readily yield the maximum amount of the preferred oils. Then, when the probable source of the desired type of oils has been decided upon, operators may proceed with a suitable plan of work.

Fortunately, the program of development that has been established by salt-dome operators through years of experience, will most effectively provide these reserves, provided an even more critical examination is given to each proposed new well or workover, to forecast whether the most favorable ratio between preferential oil and the quantity of essential material used, is likely to result.

Since salt-dome fields differ so greatly from other producing fields, and because the conditions in one salt dome usually vary so greatly from those of an adjoining salt dome, a review of some of the features of salt domes, particularly those which require special methods to produce oil from them, will be briefly noted. These have been ably set forth during recent years by writers in technical publications, trade journals, and text books. Details of these conditions should be obtained by consulting such articles, and only an outline will be given here.

Flank Sands Divided by Radial Faults

A typical salt dome consists of a mass of rock salt, roughly circular or elliptical in horizontal pattern.

THE 40-acre spacing provision of Conservation Order M-68, under fire from many quarters, is particularly disturbing to operators of the Texas-Louisiana Gulf Coast where geological conditions themselves prevent rigid well-spacing regulations if maximum efficiency and conservation are to be obtained. In view of the fact that piercement-type salt domes of this area yield crude oils that are particularly needed in prosecution of the war, being desirable for making aviation gasoline, bunker oil and Diesel oil, it is imperative that the matter be given prompt attention by those administering the spacing provisions.

The successful and efficient development of these domes, with their multiple, tilted, and faulted oil sands, requires exceptional care in selection of drilling sites, a fact heretofore developed after long experience and fully recognized by state conservation authorities.

The accompanying article has been prepared to show some of the difficulties encountered in development of piercement-type salt domes and reasons why any arbitrary spacing regulations will not only promote inefficiencies but will materially interfere with the industry's war effort.

The top of this mass may be close to the surface or at varying depths below it, thus producing the so-called shallow, intermediate or deep domes. This salt mass extends downward to great but unknown depths, possibly in some instances four or five miles. No well has ever completely drilled through the salt in the central portion of any salt dome. The top part of the salt intrusion is usually covered by a thick sheath of cap rock consisting of anhydrite, gypsum and calcite. Salt domes vary considerably in size and are usually from approximately one to three miles in diameter. Their sides range from being approximately vertical to even overhanging, to a dip as much as 30 degrees from the vertical. To the depths of present exploration the diameter usually increases with depth. This may or may not be true to excessive depths.

The productive zones are in the sedimentary beds that extend around the circumference of this salt mass. The wells are generally located in a narrow band, 300 to 500 feet wide, although wide variations from this exist. The productive zone occasionally extending three quarters of a mile or more in width. Sometimes the deeper sands require outer bands of wells to recover their oil. Usually one flank of a salt dome is much more prolific than the other.

Multiple sands are the source of production. Individual sands range from 10 feet to 15 feet to sometimes over 100 feet in thickness, and vary in number from 2 to occasionally as high as 15 or 20. Wide variations in aggregate thickness of oil sands occur and in many instances several hundreds of feet of productive sands occur. The sands with their intervening shales are tilted at high angles, ranging from 20° to 60° with the

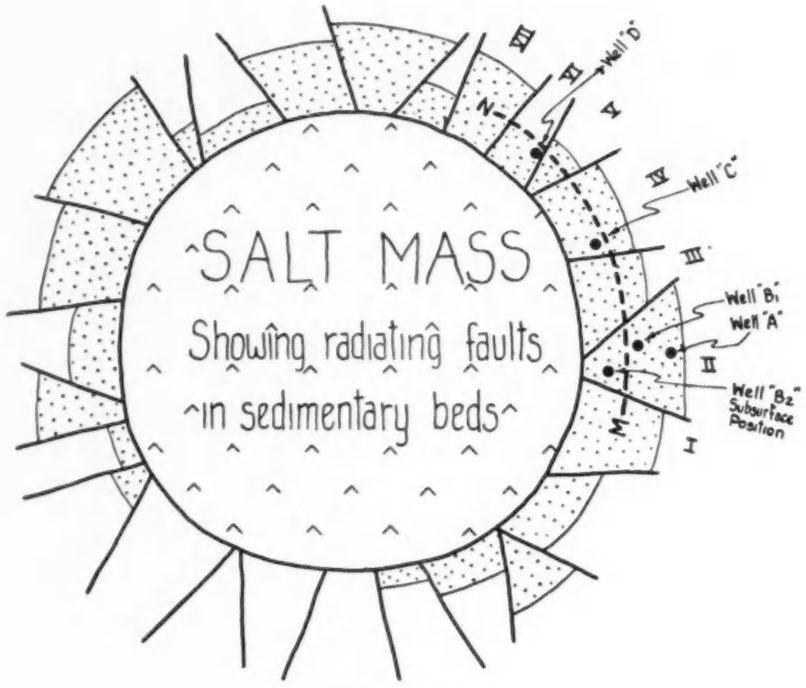


FIGURE 1
Diagram of horizontal plan of typical salt-dome field.

horizontal. The upper ends of these sands are in contact with either the salt, the caprock, a "gouge" zone, or a mass of contorted plastic, or "heaving" shale surrounding the salt mass. Occasionally an outer sand lens stops before reaching any of these.

The sedimentary beds are divided by faults of considerable throw, radiating in irregular directions away rom the salt mass. The fault planes are possibly 25 feet or 50 feet in width, and are usually filled with shale from the adjoining beds, and constitute remarkably good seals to prevent the horizontal travel of oil across the fault. These radiating faults divide the sedimentary beds into separate segments and as a result form separate and distinct reservoirs from which the oil is produced independently from that of any other segment. The oil-water contact in the same sand is usually at a different level in each segment. The number and spacing of these radial faults vary greatly around individual domes. A highly generalized statement with many exceptions might be hazarded, that radial faults occur with not more than an average distance of 1000 feet between them. Assuming such to be the case, and the circumference of the typical salt dome taken at 25,000 feet, the sedimentary beds would be divided into 25 segments. These radial faults range from nearly vertical to angles with the horizontal of about 60°.

The oil sands in general have a high porosity and permeability and produce with a low gas-oil ratio; in fact gas caps are the exception, rather than the rule. Excellent hydrostatic heads to drive the oil to the well bore and aid in its production are usually present. A study of Figure 2 shows that, due to the high tilting of the beds, edge water rather than bottom water is to be expected in proximity to the oil body. The sands are separated by intervening shales which, on most domes, are impervious to oil. As a result each sand in each segment is usually an independent reservoir from which the oil must be produced separately.

Flank Reservoirs Require Special Practices

Experience of salt-dome operators through a long period of years has shown that production cannot be efficiently secured by any set pattern of location and spacing of wells and the state authorities have consequently excepted piercement-type domes from the spacing pattern that has governed the rest of the state. This has allowed operators to determine by experience the best locations and spacing of wells to drain the sands efficiently in each field.

The expression, "each new well on a salt dome is a wildcat," probably came from the experience of operators who found that the position of radial faults in the sedimentary beds could not be determined in advance, and that any well extending ahead of production might be either in the same segment, in a new segment, or if the well itself crossed a fault, the upper part of it might be in one segment and the lower part in another. The presence of these radial faults was not fully recognized until the advent of directional surveying and close correlation of beds, aided by electrical surveys, that the industry has availed itself of for the past several yeas.

The object that has been sought by salt-dome operators is to drill with the least expenditure of time and material a well that will produce the maximum amount of oil. Production in a flank sand well ordinarily would be expected to come from horizons that are in addition to the initial producing sand. The goal as outlined above is the same as that which is stressed at present by governmental authorities, provided that the requirement

be added that such a well must produce the maximum amount of preferential oil with the minimum expenditures of essential material.

Plan for Location and Spacing Of Wells

Figure 1 is a diagram of a conventional salt dome surrounded by sedimentary beds that have been subjected to radial faulting. The inner and outer limits of production from sand No. 3 are shown by the dotted areas. It should be noted that although the sand carries oil through a greater portion of the entire periphery of the dome, the width of production varies in each segment. Locations of wells that would produce oil are shown as A, B_1, and B_2, C and D.

It is presumed that well A was drilled first. The location of this well was based upon subsurface information from the nearest wells and assistance obtained from seismic surveys. Nevertheless, the operator chose the location away from the salt, as shown, to lessen the hazard of drilling into salt without first reaching the oil sands.

Well A, although an oil well, proved to be an unsatisfactory location as it was too far out from the salt and could withdraw worthwhile quantities of oil from sands No. 1 and No. 3 only. It is assumed that after producing sands No. 1 and No. 3 the operator next drilled well B_1, which allowed production from sands 1, 2, 3, and 4, but clearly did not completely drain the up-dip oil. He next whipstocked Well B_1 considerably above the oil sands and directionally drilled it inward toward the dome. This re-drilled well is shown as B_2. When sand No. 1 had been penetrated in this well, he discontinued the inward direction of the hole and drilled it vertically downward from that point. It penetrated the lower sands in a position favorable for production. Following the usual practice, casing was set down to sand No. 6, which was produced first, and as each sand became depleted it was shut off and the casing was successively perforated in the next upper sand above, until all remaining sands had been produced. The well B_2, due to its position close to the salt, effectively drained the oil that otherwise would have remained in the formations. It will be noted that sand No. 7 was then unknown and would either have required another well, or a directional sidetrack workover from well A. This would come under the operation of wildcatting.

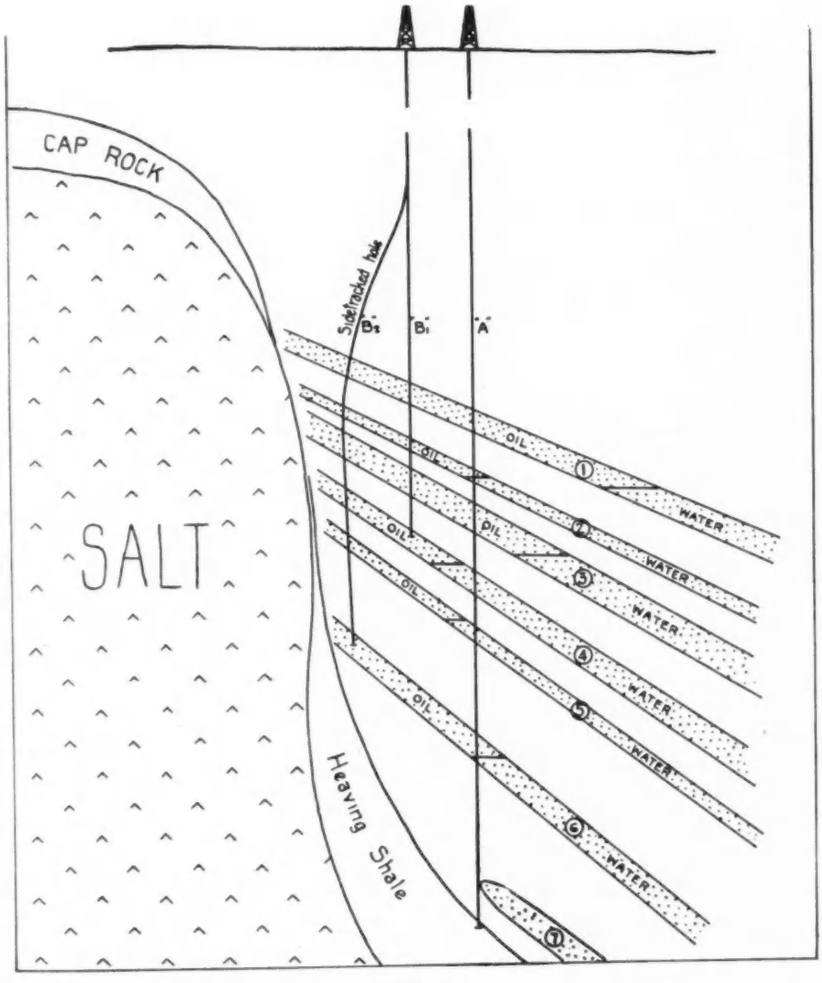


FIGURE 2
Cross section showing location of wells to explore and produce multiple sands.

Figure 3 is a section taken along the line M-N in Figure 1 in the sedimentary beds parallel to the outer circumference of the salt mass. It shows the wells A, B_1 and B_2 in Segment I, and Well C which started in Segment IV, and crossed the fault into Segment III where it produced oil from sand No. 6. Well D started in Segment V and crossed into Segment VI.

These producing wells as located were too far apart and did not adequately drain all the sands in the segments, and additional wells are required. For instance, another well is needed in Segment III, as Well C drained only sand No. 6, leaving sands 1, 2, 3, 4, and 5 unproduced. A well should be drilled in Segment V to drain it. The operator there has the alternative of whipstocking Well D into the position D_1, instead of drilling a new well there. During the present emergency, whipstocking Well D into the position D_1 would be preferable to a new well, as less casing would be required.

Wells located favorably and penetrating a number of thick oil sands usually produce up to several hundred thousands of barrels of oil from the same hole, by successively producing the several sands.

Wherever there is a possibility of reworking wells into upper sands or deepening them in lower sands, these operations should be encouraged; as in these cases, much less casing is required than in new wells. Reworking into upper sands is usually performed by one of three methods: (1) perforating casing for production, (2)

milling out a short section of casing and setting a screen, or (3) sidetracking the hole at a point well above the oil sands and drilling it directionally to bring it into a position structurally to encounter the oil sands more favorably as shown in Well B_2, Figure 2.

Wildcatting in Flank Sands of Salt Domes

Wildcatting in its proper sense is considered to mean the discovery by drilling of a hitherto unknown commercial reservoir of oil or gas.

The following classifications are suggested for flank sands of salt domes:

A—Within a particular segment
1. Deepening a well to unknown sands.
2. Directionally whipstocking a well either toward or away from the salt mass to discover new sands carrying oil.

B—A new well on the same salt dome, but at a distance from from production, to explore for oil sands in a new segment.

C—Exploring flank sands of a salt dome that has no previous production in flank sands.

Classifications A and B give the best chances for immediate production with the minimum expenditure of time and materials. A study of the particular situations involved would be necessary to determine whether A or B should give the best results.

Under classification B it is believed that any new well more than 1000 or 1200 feet in advance of production should be set up as a wildcat. This is taking into consideration both the hazard involved, and the possible new reserves that might be discovered.

Wildcats under classification C would be rated in possibility by a number of factors, including previous knowledge of the outlines of the salt mass, the presence of porous horizons and whether drilling difficulties, such as heaving shale or cavities, would likely be encountered. A favorable item is the fact that considerable structural relief is always present around a salt dome. The unknown irregularities around an unexplored dome constitute the principal hazard.

Summary

Flank sands of salt domes furnish instances of some of the greatest per-acre yields in the Mid Continent and are usually found at moderate depths. This is due largely to thick multiple sands with good porosity and permeability and a strong hydrostatic head.

Much of this oil is of the type required in the present war emergency.

The surface area underlain by the oil sands is very small compared with total amount of oil produced.

The strategic location for wells occupies a small band, usually close to the salt mass, or heaving shale zone, but in any event at a high point of the steeply dipping oil sands. Wells should be located to pierce as many oil sands as possible. The oil can be produced from these sands one at a time by small workover jobs.

The flank sands are separated by radial faults into segments which require one and often several wells per segment to withdraw the oil.

A spacing program to fit the size and shape of the individual segments and the position of the oil sands is required. A set pattern for location of wells will not apply, and would result in a large percent of dry holes, with consequent loss of essential materials.

Governmental authorities should afford such exceptions to general regulations that salt domes may be developed with spacing and location of wells that will provide maximum efficiency.

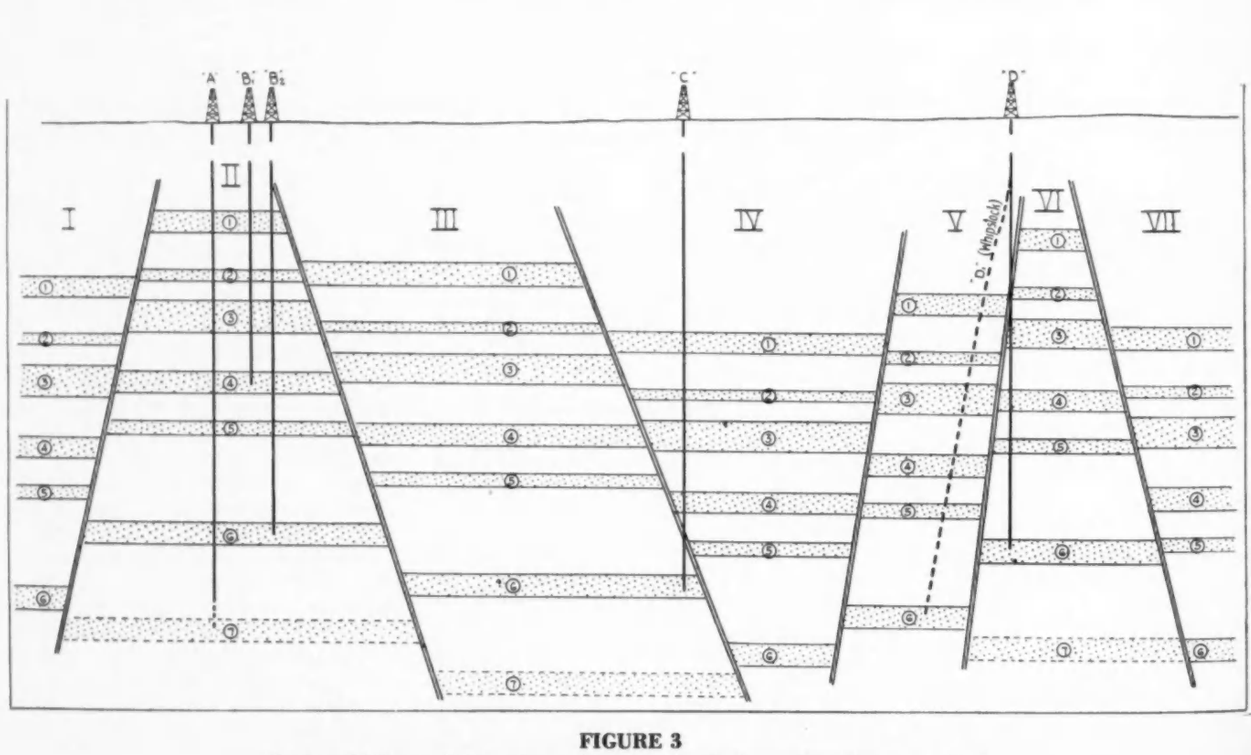


FIGURE 3
Section M-N parallel to circumference of salt through sedimentary beds, illustrating problems of well locations.

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TYLER, TEXAS
October 14, 1941

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Link-Belt Company
Southern Standard Building
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By R. C. Johnston
R. C. Johnston
General Superintendent

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San Jacinto Strike Encourages Coast Wilcox Drilling

By RIVERS REAVES, Staff Writer

THE Wilcox trend on the Texas Gulf Coast received more attention last week as a possible source of future large oil reserves with Shell Oil Company, Incorporated, completing a wildcat in the Mercy area, extreme southern tip of San Jacinto County, as a producer.

The well, Central Coal & Coke Company 1, is the fourth discovery of 1942 on the Gulf Coast and is the second of the year to find production in the Wilcox section, a sand trend which heretofore has had more or less lagging attention, but which continues to attract more geophysical exploration and wildcat drilling as more fields are found.

First in County

Besides putting new interest in Wilcox development, the discovery also establishes the first commercial oil production in San Jacinto County. Many previous wells in the county—some drilled to the Wilcox but most of them being Cockfield tests—found oil and gas shows, but no commercial production. One wildcat opened gas and distillate production at Shepherd in the eastern part of the county.

The Mercy area (no official name has been adopted) was a Cockfield prospect until the Wilcox production was discovered. Turnbull & Irwin drilled Foster Lumber Company 1, northeast of Shell's producer, to 4845 feet. Another dry hole was drilled 2½ miles south of the discovery, topping Cockfield around 5160 feet. Considerable acreage was leased during a play in the area in 1932, but most of it was dropped after the two dry holes were drilled.

Shell worked the prospect in 1939 with reflection seismograph, subsequently leasing several big tracts. The discovery well was drilled on a 5116-acre lease, but the company has approximately 9200 acres under lease centering in the following surveys: James W. Robinson, A-45, John R. Richardson, A-246, Kelly Holliday, A-157, William Dobie, A-93, and W. R. Rhoton.

The structure, believed by some geologists to be several miles long in a northeast-southwest direction, is thought to be a faulted anticline somewhat similar to other fields producing from the Wilcox sand to the east.

Markers

Markers as released by the company are as follows: Textularia warreni 3737 feet, Marginulina cocoaensis (rare) 3920 feet, Marginulina cocoaensis (common) 3980 feet, Hockleyensis (rare) 4130 feet, Hockleyensis (common) 4160 feet, Dibollensis 4745 feet, Cockfield 4935 feet, Discorbis yeguaensis 5145 feet, Eponides yeguaensis 5420 feet, Ceratobulimina 6549 feet, Discocyclina 6687 feet, Smithvillensis 7557 feet, Discocyclina advena 7650 feet, Queen City 7665 feet, Reklaw 8021 feet, Carrizo Wilcox, 8209 feet, first sand in Wilcox 8255 feet, elevation 96 feet.

With the hole bottomed at 8321 feet, 7-inch casing was cemented at 8310 feet for the production test. The casing was perforated at 8273-79 feet with 24 shots. There followed a treatment with 500 gallons of mud acid. On a 24-hour potential test, the well flowed 583 barrels of 38-gravity oil through ¼-inch choke on tubing. Pressure on the tubing mounted to 860 pounds, casing 1620 pounds. The gas-oil ratio was 771/1.

No Locations

Field rules have not been set, pending a hearing before the Texas Railroad Commission. It is believed, however, that future drilling will be on large patterns, due in part to the large leases and practically single ownership by Shell. No locations have been announced.

For the casing program, the operators set 10¾-inch surface pipe at 1972 feet. Two-inch tubing was run for completion. The well was spudded November 27, 1941, with Mac Drilling Company of Houston as contractor.

The field's production for the present is being trucked and placed in a Shell line about 12 miles east of the discovery. The line originates in East Texas and runs to the Shell refinery at Deer Park near Houston.

The discovery is approximately 1000 feet from Atlantic Refining Company's line from New Mexico to Atreco, near Port Arthur, Texas, however the line is loaded with sour crude from West Texas fields while the Mercy well produces sweet type oil.

The new field strike is regarded by many in the oil industry as more than an ordinary discovery in that it adds another field to the list of those producing from the Wilcox sand section. As a result of the discovery and others in recent months in the Wilcox, the trend is receiving more geophysical exploration work now than any other area on the Coast.

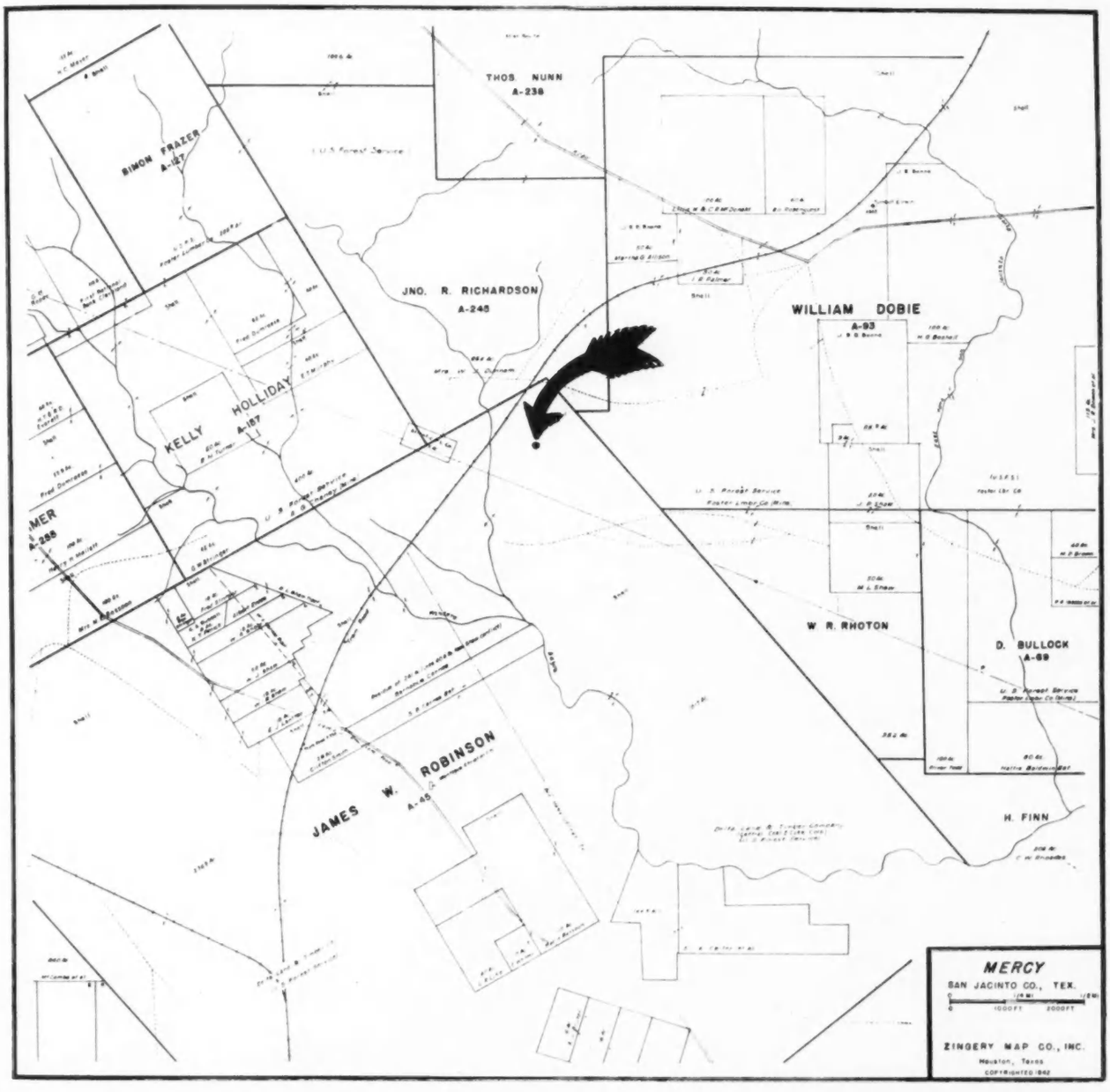
The trend, which runs a northeast-southwest course through the Texas Gulf Coast, was dormant for the most part until the recent discoveries started lease and royalty buying. Many old shallow prospects, north of the salt dome belt, which have had wells drilled to shallow depths, are being worked again, mostly with reflection seismograph. This is resulting in some instances in the old blocks being leased again for possible future Wilcox drilling.

Shell's well is on strike with Shepherd, Segno, Ace and Joe's

Lake to the east. It also is in the same trend with Camp Eleven, a Wilcox field opened in Tyler County in January. The discovery is on strike with Lake Creek, Magnolia and Raccoon Bend to the west. The fields to the east produce from near the top of the Wilcox sand while Lake Creek production is several hundred feet below the top of the sand.

The well is the third Wilcox discovery for Shell in three months. The company opened production at Brushy Creek (McManus) in Lavaca County, November 2, 1941, and at Provident City, also in Lavaca County, in January, 1942. The company established Wilcox production at Sheridan in Colorado County in May, 1940. At present the company is drilling a deep Wilcox test, Hintz 1, in the Sealy area of Austin County.

Shell Has Large Block Around Late Discovery



Arrow points to location of Shell Oil Company's Wilcox-sand discovery in the southern position of San Jacinto County, Texas Gulf Coast. The well is Central Coal & Coke Company 1, spotted 990 feet from the northwest line and 990 feet from the northeast line of the lease. The well, which opened the fourth field of the year on the coast, flowed 583 barrels of 38-gravity oil on a potential gauge. Shell has approximately 9200 acres under lease in the area, centering in the surveys shown on map.

Decreased Costs and Improved Well Performance Gained Through

Pumping Equipment Modernization

By GILBERT M. WILSON, Staff Writer

MANY wells, particularly those approaching the marginal stage, that are now equipped with older style surface pumping equipment may be in serious need of attention for repairs, and in numerous cases, actually in need of entirely new installations. By following a conservative plan of equipping such wells with part new and part reconditioned salvaged equipment, and slowing down the pump speed to bring about a definite reduction in maintenance costs, many operators will find that their marginal wells may yet, despite the steel and equipment emergency, be made to continue producing satisfactorily for some time to come, or at least for the duration.

During the past year or two, there has been a marked increase in the trend toward modernization and streamlining of surface pumping equipment. Now that strict regulations have been formulated regarding the drilling of new wells, thousands of existing wells that have been teetering of the verge between profitable and unprofitable production, now may be forced to continue producing, since it will be impossible for the average operator to drill additional new ones unless they are on a 40-acre spacing basis. This latter condition is in itself one which will eliminate hundreds of small operators whose undrilled acreage in a certain field might not exceed more than 10 to 20 acres, or at most, 40 acres.

Wells re-equipped with small unitized drives for slow-speed pumping often may not require removal of the band wheel, or alteration of existing standard end equipment.

Reconditioning Old Pumping Units

To soften the blows of such rigid restrictions and control regarding the use of new equipment, and make possible the fulfillment of the crude production demand placed upon it by the nation for its war and civilian needs, many operators are beginning to look for ways and means of patching up or maintaining their existing equipment; of supplementing or combining their present worn surface equipment with some new additions to make the whole as serviceable as possible without having to buy entirely new installations. They also are making provisions for the salvage of much of the old equipment now on hand to make it serve as replacement stock for future maintenance and repairs.

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Replacement of the old single-cylinder gas engine, belt and band wheel, by small gas engine or electric motors has lowered maintenance costs. Chain drive between gear box and band wheel shaft sprocket runs in enclosed oil bath.

all pumping equipment, and the type that probably is now most sorely in need of repair or replacement, is the old standard end pumping unit, with its single-cylinder engine, long belt, and band wheel.

Many companies already have entirely replaced this old equipment with the newer types of unitized pumping units having electric motor, or gas-engine drives. Others have to a large extent done away with the large single-cylinder engine and long belt, to replace them with a gear box and a smaller engine or electric motor. Some have made good use of part of the existing equipment, such as installing gas engine or steam engine cranks for use as countershafts and retaining the same band-wheel shaft, pitman and walking beam. The slower speeds resulting from such installations have contributed greatly to a reduction of repair costs and generally improved pumping conditions.

One company owning a large number of wells equipped with this older equipment, has in the last two years, reconditioned some 62 wells by partly re-equipping them in the manner generally outlined above. Substantially better performance, and lower maintenance costs have been realized in those wells since the program was started.

Slow Speed Pumping Often More Desirable

The reconditioning work, directed primarily toward elimination of the large single-cylinder engines to make possible the addition of certain new equipment designed to adapt the well to slow-speed pumping, was begun on each well only after an exhaustive survey was made of the production rate, water cut, normal operating fluid level, plunger loads, and general condition of the band wheel, pitman, walking beam, and derrick.

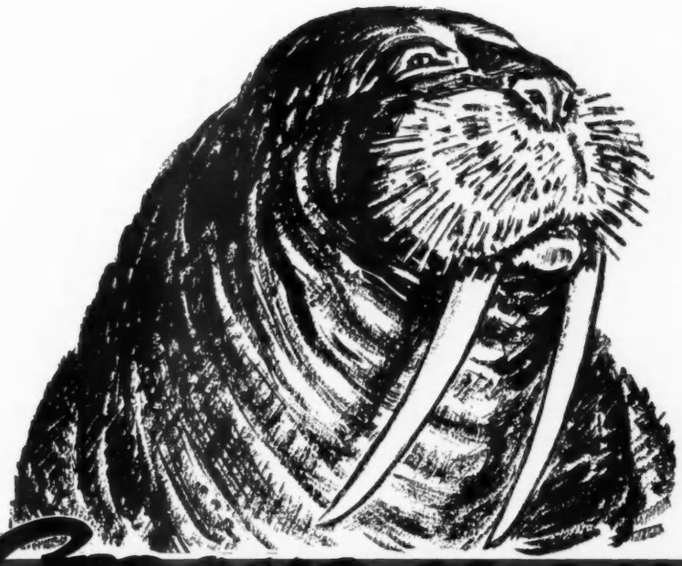
Average gross production rates of wells that were reconditioned vary from 25 to 100 barrels per day, with water cuts in some wells running as high as 75 to 90 percent. Wells were pumped from depths varying from 2300 to 6800 feet. Pumping with the old equipment made it difficult and usually impossible to slow the engine down to a speed where the pump would handle the fluid only as fast as it came into the hole. If a well pumped faster than this optimum rate, the plunger pounded fluid, tending to increase formation of B. S., causing rough action of the pumping strokes, and in general, bringing about early trouble in the form of worn pumps, broken rods, and overhauling of surface equipment.

On a typical well that was reconditioned, the single-cylinder engine and long belt was removed, the tail house or belt hall dismantled and shortened up to within 8 or 10 feet of the band wheel. In some cases, the band wheel itself was removed from its shaft if its condition were such that it was advisable to do so.

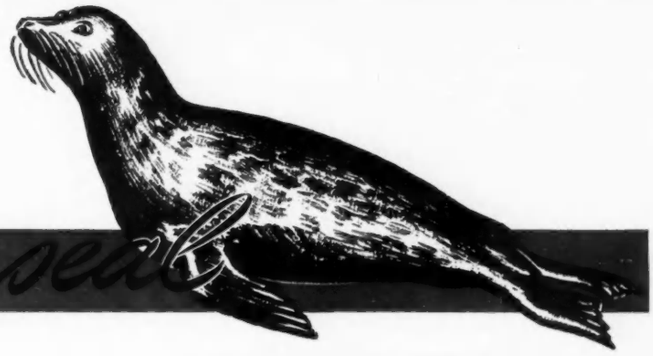
A small unitized electric drive, mounted on a steel base atop a large timber beside the band-wheel well, was connected up to the end of the band-wheel shaft. The motor was connected up by V-belts to the gear box, and the shaft on the slow speed side of the box, fitted with an 8-inch double chain sprocket, was connected by chain drive to a larger, approximately 70-inch diameter sprocket keyed to the band wheel shaft. The double chain drive and sprockets run in an oil bath inside a sheet iron case, the top half of which may be easily removed for inspection or repair purposes.

Size of motors used depended upon the plunger load of the individual well, but varied from 3 to 10 horsepower, with the average size being 7½ horsepower. Constant speed, 4-pole, 3-phase, 220-volt motors were used. Of the 62 installations, 17 were equipped with 3 horsepower, 17 with 5 horsepower, 26 with 7½ horsepower, and 2 with 10 horsepower. Either of two sizes of gear box were generally used—the 10,000-inch-pound, or 19,500-inch-pound size.

The majority of the wells reconditioned were equipped with pumps having 1¼- to 1½-inch plungers. The new slower pumping speeds ranged from a 48-inch stroke at 14 strokes per minute, to a 56-inch stroke at 11 strokes per minute, the speed of each well being determined from the amount



STRONG AS A WALRUS...



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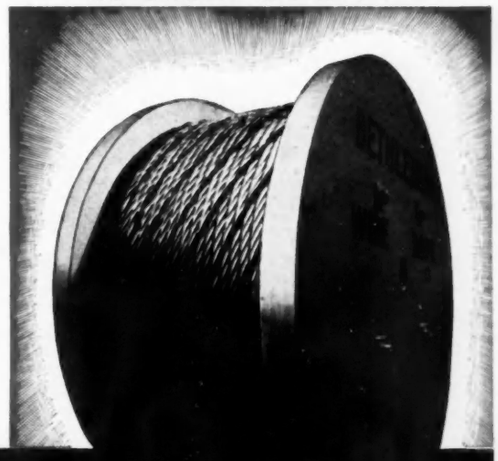

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of fluid being lifted in each case and from what depth.

Much Original Equipment Retained

Wells reconditioned in this manner generally were already equipped with the common rotary type counterbalance which also served as crank for the pitman. The counterbalance was adjusted to the newer conditions of longer, slower stroke, and the load on the plunger. Pitman, walking beam, horsehead, and all bearings were thoroughly gone over, and repaired if necessary, before the well with its new and altered pumping equipment was again placed on steady production.

On certain wells, other than those which were equipped with small electric motors, it sometimes was found to be more economical to install multi-cylinder gas engines in connection with a countershafting arrangement. This condition was found to be particularly true in wells which required power ranging from 10 to 20 horsepower, and higher.

In such instances, the belt and band wheel were retained, and used in connection with a countershaft that usually was made up out of the former gas engine, or the crank and base of an old steam engine. In case of a certain set of conditions which required a particularly heavy shaft, a specially designed countershaft was used. A V-belt drive connected the engine to one side of the countershaft, with the flat belt taking off a pulley on the other side.

Some companies have found it profitable to sweat a heavy steel rim over the outside of one of the large gas engine flywheels, then turning it down with V-belt grooves, and using it as the large pulley to be driven by the multi-cylinder engine.

Special care must be taken on wells equipped with the larger horsepower units to make sure that engine and countershaft foundations are in good condition (preferably newly laid), and that the remainder of the standard end equipment is sufficiently strong and suitable for further service under the new set of pumping conditions.

Lifting Costs Lowered

An immediate general improvement has been noted in those wells that have been provided with the limited modernization additions discussed above. Chief among the several noteworthy items observed for the short-coupled electric-motor units, is that of a sharp reduction in maintenance costs. Done away with are such things as belt repairs and replacement, engine clutch and magneto repairs. Because the wells are now pumped with a long slow stroke, the fast, rough pounding action that formerly brought about early rod jobs, and standard-end repairs also has been eliminated. And due to the steady rate of withdrawal of fluid from the hole, the movement of the oil through the formation will eventually approach a constant speed that will cause less bypassing by the water back in the sand.

New Problems Require Better Records

The new pumping conditions have created several new problems, but none, however, that cannot be remedied easily. Due to the fact that a well pumps at a constant rate of speed, and cannot be altered unless the pulley sizes or length of stroke are changed, the pump, as it gradually becomes worn, pumps less and less fluid, causing the fluid level to rise in the casing. With the former flexible speed control of the old gas engine, the production rate could be stepped up to compensate for such pump wear merely by increasing the throttle. This disadvantage is offset by the lesser amount of wear that is actually sustained in the pump barrel due to the slower stroke, and the fewer pulling jobs required over a period of a year.

Constant-speed production means that a much closer check must be maintained on the daily production rate, combined with a periodic survey of the fluid level. When a drop in production rate is noted, a test determining the fluid level under the normal operating conditions can be used to confirm whether the trouble is in the pump or in the formation or liner perforations.

Salvaged band wheels that still may be of value as replacement parts in the near future, are braced in upright position, and covered to prevent warping and other damage.

A higher than normal fluid level indicates that the pump is not handling the fluid as fast as it should, and probably demands a pulling job for repair of the pump, or a check of the adequacy of the gas anchor. A lower fluid level usually will indicate that it is not due to the fault of the pump, but that the fluid is not entering the hole, because of either clogged perforations, or a decline in the ability of the formation to produce.

Equipment Salvage Spurred

Since the steel situation has become critical, a great many operators have hastened to salvage, and preserve in operating condition, many pieces of pumping equipment that formerly were laid aside or even junked, but which, under the present greatly altered conditions may still prove to be of value when pressed into emergency service as replacement parts on their existing equipment. Among such items are old gas or steam engines, which as indicated elsewhere in the article, may be converted, at least for the duration of the emergency, into countershafts; rods and tubing that may be salvaged by straightening, or rethreading of ends or fittings; and such equipment as band wheels, calf wheels, and bull wheels.

Typical of what may be done along this line is the method used by one operator of salvaging, and preserving in operating condition, old band wheels that had been displaced by newer type pumping units. Each band wheel was stood up in a vertical position on two short sections of timber placed just far enough apart that they provided a firm support, yet did not allow the wheel to touch the ground. The wheel was firmly braced in this upright position with at least two braces extending out from each of the two sides, and spiked in place.

Each wheel then was covered with scrap sections of corrugated iron, on both sides and around the periphery of the rim, down as close to the ground as possible. Maintaining wooden band wheels in such a position prevents much warping that would occur if they were laid horizontally upon the ground, affords as little surface as possible to rain, and takes up a minimum of storage space.

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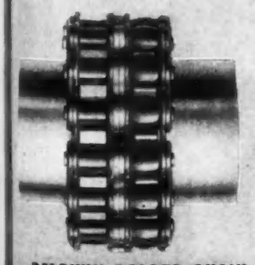

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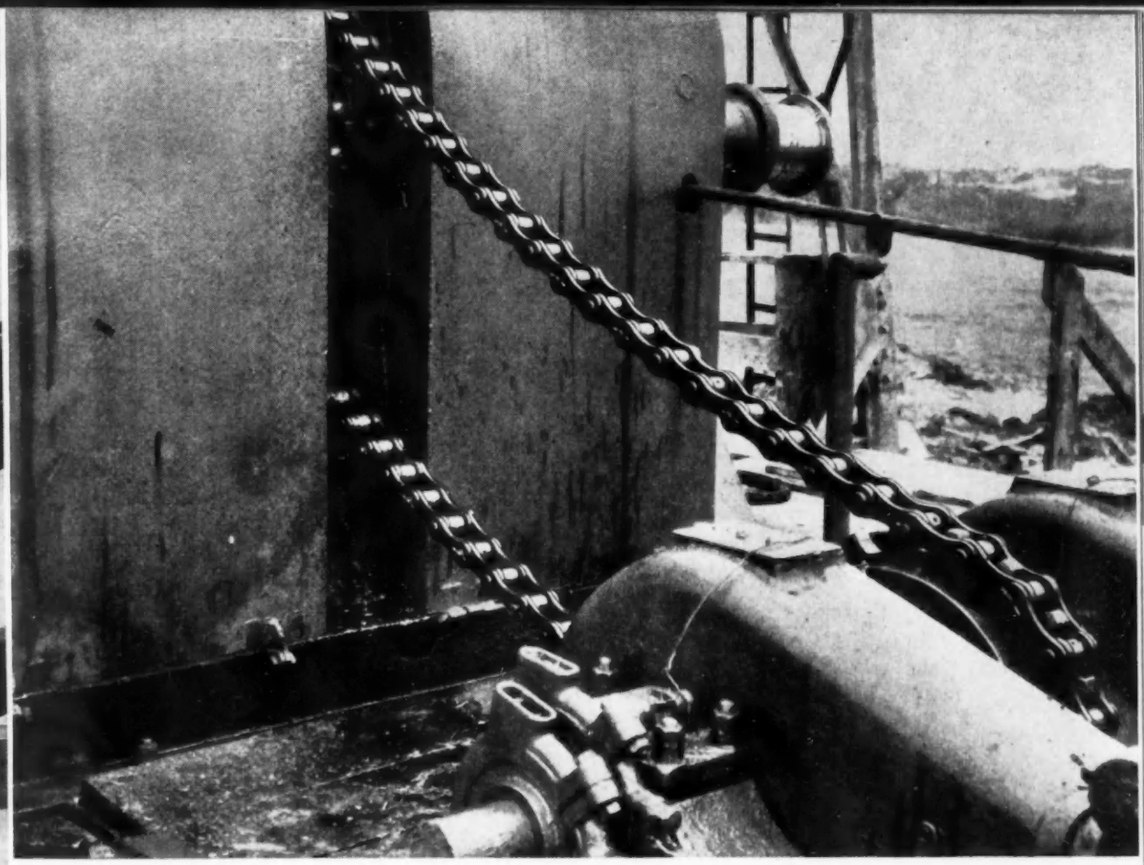

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Board Lift Saves Casing-Walk Effort

IT IS customary to send out two additional men to assist the regular drilling crew when running casing. These men, to avoid breaking up derrick-floor combinations, usually draw assignments to pipe rack and walk. Their duties include rolling over, tying onto and supplying the casing as required.

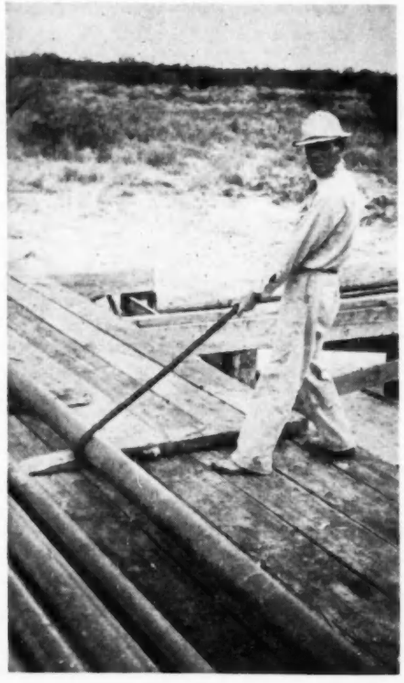
Due to difficulty in obtaining these extra men, it is sometimes found necessary to try and run casing with but one extra, requiring double duty of the man on the rack and increasing chance of accident.

To simplify this work, one company uses a board ramp or lift on the walk, the piece of 3x8-inch being cut to span the width of the walk, with one end tapered to an elongated wedge shape. This board is then fastened to the walk with one large spike, driven through it and into the walk about 8 inches from the tapered end and fixing the board with the inclined end nearest the pipe and close to the walk edge. To the side of this board 6 or 8 feet of spinning rope is nailed by one end, the fastening being some 2 to 2½ feet from the tapered end.

Rolling the joint of pipe over onto the 3x8 elevates the collar end, greatly facilitating the tying on of the lift line. Rolling of the pipe is greatly assisted by the rope, which passes up and around the pipe, the pull on the free end acting to roll the pipe up the incline and across the board with a type of parbuckle applying force most effectively.

As the joint of pipe is lifted and dragged into the derrick the thread protector on the outer end slides across the walk in the usual manner, striking the lift board at some point beyond the nail pivot, and turning it to allow unrestricted passage of the pipe. For placing the next joint, the lift block may be kicked back into place and the rope laid out so the pipe will clear it in being rolled against the incline, after which the line is tightened and the joint rolled into place for tying and dragging in.

Whenever possible, even using this labor-saving device, two extra men are sent out on a casing job, the extra man being used as relief to "spell off" each man of the crew in turn, and thus to increase their effectiveness appreciably and render them less likely to accident.



Above: The board lift with tug rope laid out across pipe before rolling joint into position for derrick lift.

●

Center: The rope aids in rolling the joint onto lift for better tying of lift rope.

●

Bottom: The joint of casing has swung the lift celar in its passage to the derrick and may be kicked back into place for the next series of operations.

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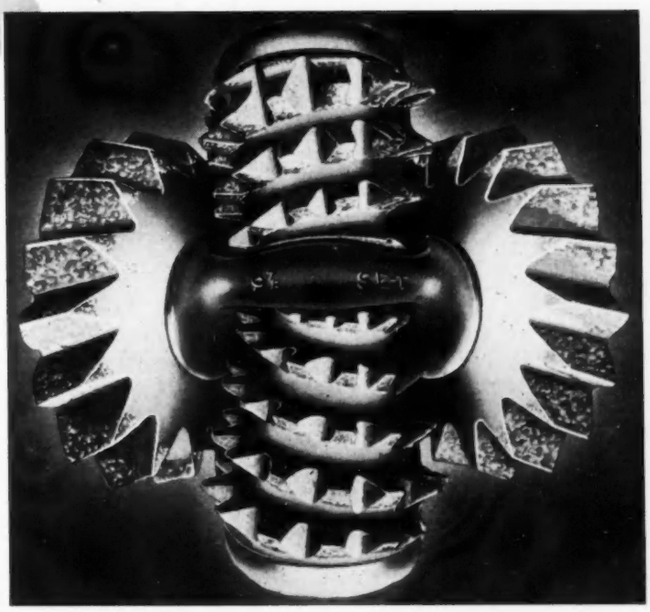

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P. O. BOX 2119 **HOUSTON, TEXAS**

Reduction of Hole Size in Drilling

As Affecting Costs, Completion and Production Practice

PART 2—PRODUCTION*

By I. W. ALCORN, The Pure Oil Company, and J. U. TEAGUE, Hogg Oil Company

THE second part of this paper treats with the effect reduced well size has on the completion, production, and maintenance of the well. The diameter of the well, as referred to in this part of the paper, will be the diameter of the final string of casing set rather than the size of the hole drilled. It is important that this distinction be made, because in many instances small-size casing is set in comparatively large holes.

The data presented were obtained in the same manner as for the first part of the paper, except that the questionnaires sent out requested that data be presented by fields rather than individual wells. Detailed information was requested on the extent to which smaller-size casing had been used, comparative costs between the small-diameter and large-diameter wells, any limitations small-size casing imposed on artificial-lift methods and well repairs, and opinions as to the minimum casing size practical for well completion. It was requested that data be submitted only on those fields in which wells had been completed with both large and small sizes of casing within the past few years, and for which reliable information was available.

Several questionnaires were sent out to each member of the Southwestern District Topical Committee on Production Practice, and a supply to each chairman of the other district topical committees on production practice, with the request they canvass their respective memberships for available information on the subject.

The response to the questionnaires was not as general as had been hoped for, but those questionnaires which were returned gave excellent data. In addition to the questionnaires returned, there were numerous replies and comments from various sections of the country stating that either small-diameter casing had not been used for well completion in that particular section, or that its use had been so limited that no helpful data could be offered.

The distribution of the questionnaires returned, by states, is given in Table 7.

Table 7 shows that data were submitted by returned questionnaires on 20 different fields, 18 of which were located in Texas and Louisiana. There are in excess of 2200 wells, both large- and small-diameter, in the 20 fields, and their depths range from 2550 feet for the shallowest to 10,100 feet for the deepest.

Although the data available are too limited to permit any definite conclusions to be drawn as to the economy and application of the small-diameter wells generally, a fairly accurate picture of the success of small-diameter wells to date is presented.

The small-diameter well, as defined by the majority of replies, is one in which 5½-inch O.D. casing was the final size casing set, and a large-diameter well one in which 7-inch O.D. casing was the final size casing set. The small-diameter well was equipped with 2-inch tubing for a flow string, and a large-diameter well with 2½-inch tubing for a flow string. A summary of casing and tubing sizes designated as large- and small-diameter wells is presented in Table 8, from which it will be seen that very few wells reported are outside this classification.

The primary reason for completing smaller-diameter wells is to reduce the initial cost of the wells. A comparison between the average cost of large- and small-diameter wells in those fields on which information was submitted is shown in Table 9.

It may be seen from Table 9 that the average cost of the small-diameter well is less than the large-diameter well in every field.

The difference in cost between the large- and small-diameter wells represents the saving due to the use of smaller casings, tubing, and well fittings, and any saving due to drilling a smaller-diameter hole. It also includes any saving which might be due to improved drilling methods adopted between the completion of the large-diameter wells and the small-diameter wells.

The cost data submitted are not in sufficient detail to resolve the difference in cost between the large- and small-diameter wells into its component parts and evaluate them, as was done in Part 1.

The difference between large- and small-diameter-well costs varies widely between fields. This seems to be true irrespective of the location or depth of the well.

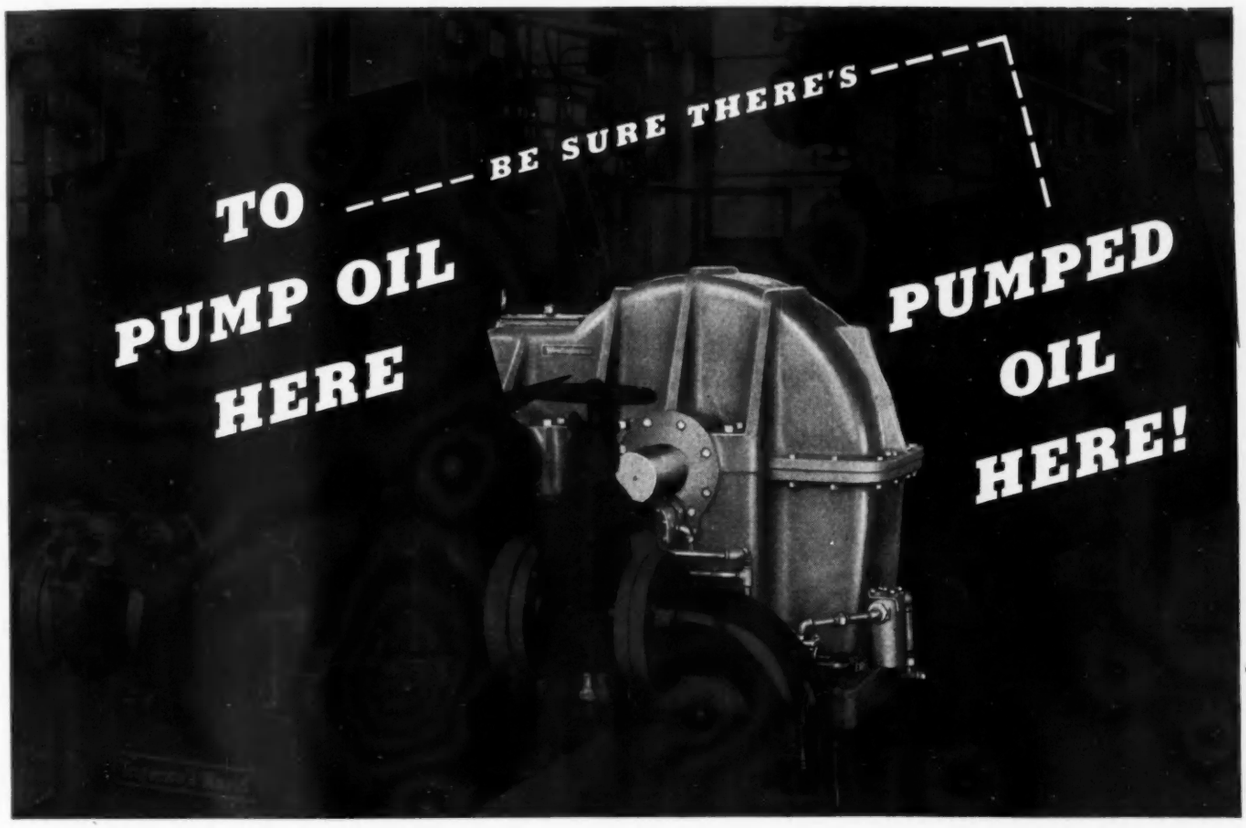
This variation would be expected because of the difference in drilling conditions between fields and the difference in drilling and completion practice of individual companies. Some of the wells were drilled

TABLE 7
Distribution of Fields on Which Data Were Submitted

STATE	Number of Fields	Number of Wells		Range of Depth	
		Large	Small	Shallowest (Feet)	Deepest (Feet)
Texas	13	1,062	999	2,550	7,629
Louisiana	5	41	19	9,400	10,100
California	1	5	5	4,000	4,000
Oklahoma*	1	....	....	4,000	4,000
	20	1,108	1,123	....	....

* Seminole field—number of wells not given.

*Part 1 appeared in the issue of February 2, 1942. This paper represents a joint effort of the Southwestern District Topical Committee on Drilling and Production Practice (API), and was presented before the institute's annual meeting in San Francisco, November 5, 1941.



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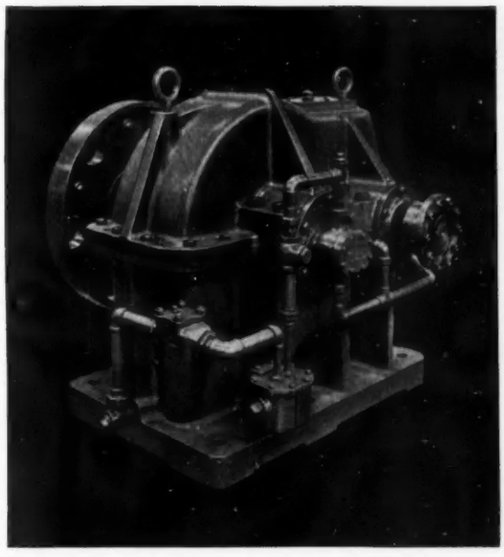

Westinghouse Type SU-14-8 Speed Increaser showing forced-feed lubrication system with pump, cooler and strainer externally mounted.

J-07188

Westinghouse Geared Drives

TABLE 8
Casing and Tubing Sizes of Large- and Small-Diameter Wells

	SIZE OF FINAL CASING STRING						SIZE OF TUBING	
	8⅝-Inch	7-Inch	6-Inch	5½-Inch	5-Inch	4½-Inch	2½-Inch	2-Inch
Large-diameter wells	5	1,103	0	0	0	0	1,016	92
Small-diameter wells	0	0	4	984	6	24	9	1,015

by contract, others by company equipment. Some companies drilled smaller holes for the small-diameter wells; others drilled the same size holes for both the large- and small-diameter wells. The variation in well costs in the same field between companies is illustrated by the data submitted on the Luby and Tomball fields. The wells were drilled in the same fields but by different companies, and the average well cost varies considerably.

Irrespective of what part of the savings indicated in Table 9 is due to the use of smaller casing and what part is due to drilling smaller-size holes or other causes, the data show that attractive savings in initial well costs can be realized by drilling and completing smaller-diameter wells.

Completion of Wells

There was no difficulty reported in completing small-diameter wells by any of the methods commonly used in completing large-diameter wells. A summary of the methods used to complete the large- and small-diameter wells on which data were submitted is shown in Table 10.

It is interesting to note that a greater percentage of the small-diameter wells is completed by gun perforation than the large-diameter wells, and there is a definite trend away from the use of screen in the smaller wells. This does not mean that the small-diameter well is more adaptable to completion by gun perforating or to producing without screen but, rather, represents the latest trend in well completion—because, in general, the small-diameter well represents the more recent completions.

No attempt will be made herein to discuss the relative merits of the different methods of completion or to describe the technique of any methods. Detailed information on methods of well completion is available from many excellent papers already in the literature.

Well Potentials

In 15 of the 20 fields on which questionnaires were returned, well potentials are determined by flow tests taken on chokes ¼-inch in diameter or smaller. In 10 of these 15 fields there is no appreciable difference reported on potentials taken on either large- or small-diameter wells; in three fields no comparative data on potential tests between large and small wells were available; and in two fields smaller potentials were reported on the small well. The smaller potentials in one of the last two fields can be accounted for partly by a drop in bottom-hole pressure of 177 psi between the time tests were made on the large-diameter wells and the time tests were made on small-diameter wells. There is no marked difference in the method used in completing the wells in these fields, so that the method of completion could have had no effect on the potentials taken.

It would appear from these results that the reduction in the size of the casing and flow string in the small-diameter wells does not restrict the rate of flow on chokes ¼-inch in diameter or smaller.

This conclusion is confirmed further by the curve shown in Figure 7. This curve is plotted from the results of potential tests taken on comparable wells in a large Gulf Coast field to determine the effect of choke size and tubing size on well production. It shows very little difference in production rates through ⅛-inch, 3/16-inch, and ¼-inch chokes on 2½-inch and 2-inch tubing. But through 1¼-inch tubing there is a noticeable decline in production on

TABLE 9
Cost Comparison of Large- and Small-Diameter Wells

FIELD	Depth (Feet)	Number of Large-Diameter Wells	Number of Small-Diameter Wells	Average Cost of Large-Diameter Wells	Average Cost of Small-Diameter Wells	DIFFERENCE IN COST	
						Dollars	Percentage of Large-Diameter-Well Cost
Texas:							
Baylor, Texas	2,550	3	24	$ 13,000	$ 9,000	$ 4,000	30
East Texas	3,600	570	53	11,500	9,500	2,000	17
Luby, Texas	4,300	6	16	22,847	18,491	4,356	19
Luby, Texas	4,775	15	37	26,285	20,077	6,208	24
Goldsmith, Texas	4,200	65	285	30,286	28,528	1,758	6
West Ranch, Texas	5,100	50	50	21,577	18,975	2,602	12
Benavides, Texas	5,378	3	2	25,300	16,622	8,678	33
North Withers, Texas	5,390	10	34	19,566	17,733	1,833	9
Tomball, Texas	5,570	214	180	24,434	16,822	7,612	31
Tomball, Texas	5,575	10	16	29,700	24,700	5,000	17
East Placido, Texas	6,300	12	5	33,171	31,537	1,634	5
Lockridge, Texas	6,375	10	3	44,000	29,000	15,000	34
Not given—Texas	6,778	15	97	34,600	28,500	6,100	18
Not given—Texas	7,100	75	195	34,875	24,437	10,438	27
Hardin, Texas	7,629	2	2	47,250	40,255	6,995	15
Louisiana:							
Rodessa, Louisiana	6,023	15	3	58,980	44,852	14,128	16
South Jennings, Louisiana	9,400	3	3	89,130	84,700	4,430	5
Gibson, Louisiana	9,500	12	6	58,000	50,000	8,000	14
Chalkley, Louisiana	10,100	3	1	80,000	73,000	7,000	9
Not given—Louisiana	10,000	8	6	100,500	90,000	10,500	10
Other States:							
Seminole, Oklahoma	4,000	Most all	A few	25,000	23,000	2,000	8
Wilmington, California	4,000	5	5	55,000	44,000	11,000	20

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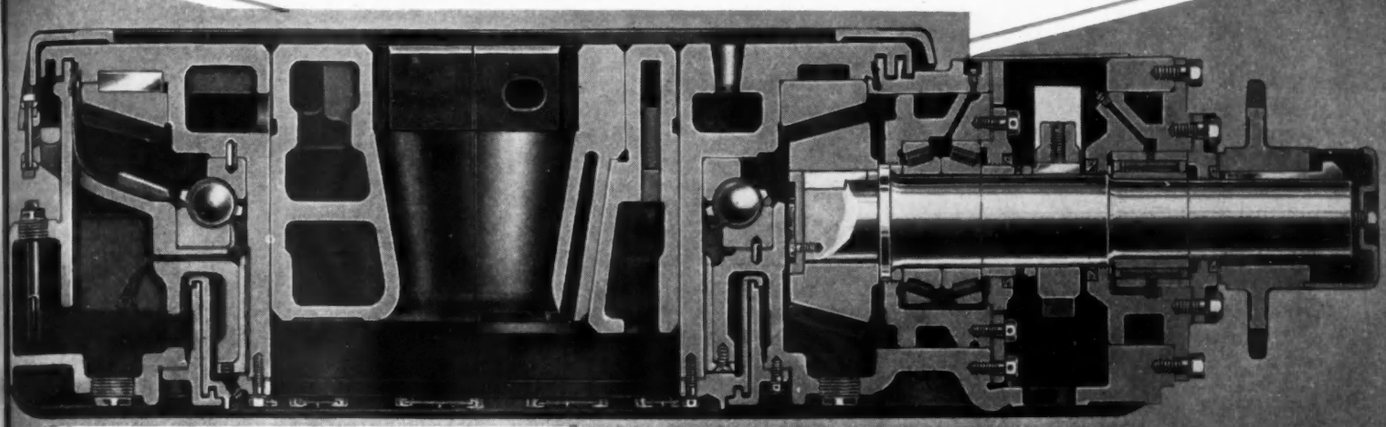


Constant and Ample Lubrication

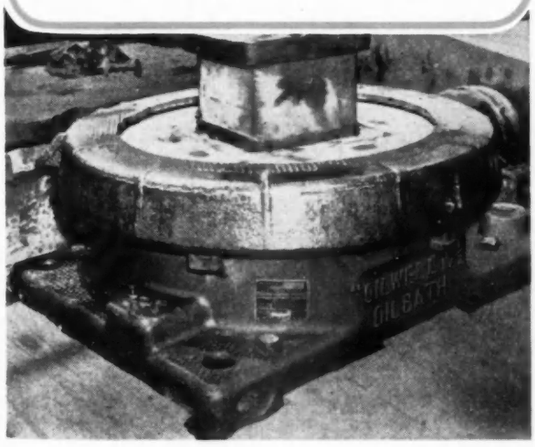
is the best assurance of long, efficient life. Illustrated in solid orange is the continuously circulating oilbath lubrication of the "Oilwell" 27½-A and 17½-inch Oilbath Rotaries. Oil picked up by the pinion and thrown from the gear is conducted by troughs in a steady stream to the main bearing. Part of the flow continues through the radial and hold-down bearing, keeping it constantly immersed in a shock-absorbing oil-cushion. Overlapping of the hold-down ring and oil-retainer ring insures complete return of the lubricant as it continues its circulating flow back to the reservoir.

Time-proved labyrinths at both the top and bottom effectively seal the oilbath enclosure and prevent intrusion of foreign matter. Shaded orange illustrates the separate lubrication of the pinion-shaft roller bearings in their sealed enclosures.

To maintain a constant oil pressure at the extreme speeds (up to 1000 r.p.m.) for which it is designed, the "Oilwell" 21-inch Super-Speed Rotary is provided, in addition to the splash system, with forced-feed lubrication throughout, including pinion shaft roller bearings.

. . .

"Oilwell" 17½-inch Oilbath Rotary.



IN times of emergency, rotaries, like men, are counted on to stand up and render efficient, reliable service as long as the need exists. Performance records show that "Oilwell" Rotaries have what it takes in reserve capacity, durability and *lasting* efficiency. Here are some of the reasons for this performance:

★ **Ample Capacity**

	17½-inch Oilbath	21-inch Super-Speed	27½-A Oilbath
Rated Drilling Depth	7,500 ft.	17,000 ft.	17,000 ft.
Dead Load Capacity	200 tons	300 tons	300 tons
Max. Table Speed	400 r.p.m.	1,000 r.p.m.	400 r.p.m.

★ **Fully heat-treated, spiral-bevel gear and pinion with the pinion given an additional surface hardening.**

★ **High-speed, self-centering, angle-contact main bearing with large-diameter, high-precision balls and through-hardened and ground high-carbon, alloy-steel races.**

★ **Heavy-duty bronze radial and hold-down bearing.**

★ **Compact and sturdy unit-assembly of the fully heat-treated pinion shaft, its bearings, bearing housings and locking wheel.**

★ **Rigid cast-steel base with integral skids, table enclosure, and cylindrical supports for the pinion-shaft bearings.**

★ **Constant and ample lubrication — see illustration and description.**

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TABLE 10
Completion Methods Used in Large- and Small-Diameter Wells

	Total Number of Wells	Percentage of Wells Completed with:		
		Open Hole	Screen and Liner	Perforation
Large-diameter wells	340	0	73	27
Small-diameter wells	411	4.4	57	38.6

the ¼-inch and 3/16-inch chokes, but with comparable rates on the ⅛-inch choke as compared to the flow through 2½-inch and 2-inch tubing.

In the other five fields, one field determined well potential from productivity indices, one by capacity pumps, one by open flow through casing and tubing, and two required no potentials to be taken.

In the field in which well potentials were determined by productivity indices, the average productivity index for the large-diameter wells (8⅝-inch casing and 6⅝-inch liner) was 7.0 barrels per day per pound of drop in pressure, and for the small-diameter wells (7-inch casing and 4¾-inch liner) 5.9 barrels per day per pound of drop in pressure. The productivity indices on both the large and small wells varied from 2.5 barrels to 12 barrels per day per pound of drop in pressure. According to the questionnaire, it was not felt that the difference in the average indices could be attributed to the difference in diameter of the wells.

In the field in which well potentials were determined by open-flow tests, it is stated in the questionnaire that the second and third largest tests on wells in the field were made through 2-inch tubing and 5½-inch casing. The rate of flow was approximately 5000 barrels per day. It is, of course, a matter of record[4] that in open-flow tests the larger the diameter of the casing or flow string in the well, the more fluid can be produced, so long as the ability of the well to produce exceeds the capacity of the casing or flow string.

The field which had well potentials taken on capacity pumps reports smaller potentials on the small-diameter wells. Wells completed with 5½-inch casing and 2-inch tubing in this field had a production limit of 400 barrels per day, as determined by the capacity pumps. No comparative tests on the large-diameter wells were given, except to say the production was greater than 400 barrels per day.

Paraffin

There was no difference reported in the cost or difficulty in removing paraffin from either 2-inch or 2½-inch tubing.

Bottom-Hole Pressures

Bottom-hole-pressure surveys can be made as readily through 2-inch tubing as through 2½-inch tubing.

Methods of Artificial Lift

Few data were submitted in the questionnaires on the performance of artificial-lift installations in small-diameter wells, because nearly all the wells in the fields reported were flowing. Only 6 percent of the large-diameter and 7 percent of the small-diameter wells were on artificial lift, and the majority of these were on gas lift.

Because of the limited data, determination of the effect of small-diameter wells on the application of artificial-lifting methods must be deferred to future investigation.

The opinions expressed in the questionnaires as to the limitation small-diameter wells will impose on artificial-lifting methods are interesting predictions, and in the absence of actual performance records bear summarizing:

The consensus expressed in the questionnaires is that all types of artificial-lifting equipment in common use today could be used successfully in the small-diameter wells. A preference is expressed for using gas lift in the small-diameter wells.

In the majority of cases it was felt that all anticipated production requirements could be met by artificial-lifting equipment of a size which could be installed in the small-diameter wells. However, for large-volume production with rod pumps it was admitted the small-diameter well would restrict production.

A portion of an interesting letter[5] on the performance which could be expected from typical rod-pump installation in different Mid-Continent fields is quoted as follows:

"A typical capacity pumping well in Kansas is 3300 feet deep, and produces mostly water with a low percent of oil. Fluid levels are normally high, and there is very little gas present with the production. A well with 2-inch tubing would have 1¾-inch bore plunger, and produce approximately 400 barrels fluid daily. A well equipped with 2½-inch tubing would have 2¼-inch bore plunger, and produce approximately 800 barrels fluid daily. A well with 3-inch tubing would have a 2¾-inch bore plunger, and would produce approximately 1200 barrels fluid daily. Practically all pumping tubing is external-upset, but some use is made of 3-inch regular tubing when it is necessary to run inside 5½-inch casing. This 3-inch regular will probably be satisfactory for Kansas depths and shallower.

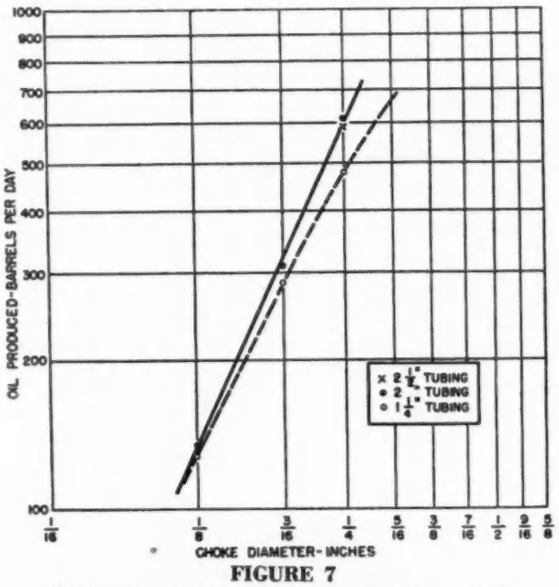

FIGURE 7
Production Test on Wells in a Gulf Coast Field.

"Wells in the Earlsboro pool of Oklahoma also lift mostly water from a pumping depth of 4300 feet. Static submergence is about 250 pounds while working submergence ranges from 50 to 200 pounds. There

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The Hunt Welded-In Blade Bit is the answer to the industry's demand for a drag bit to meet today's deeper, faster drilling requirements. Its profitable advantages, listed below, have made it the most popular drag bit in the Gulf Coast.

The body is cast from alloy steel and heat-treated for maximum strength and durability, and carefully inspected before and after machining. The blades are drop forged from steel, dressed with tungsten carbide inserts and tube metal, and carefully heat-treated to insure uniformity in wearing and shock-resisting qualities.

The blade runs entirely through the body, giving greater strength. The design of the blade requires only a small V-weld to weld blade into body . . . thus eliminating 60% of the heat necessary to weld on conventional blade bits. This elimination of heat, after the blade has been heat-treated, gives as near a perfect blade as is possible to build.

The fluid courses are lined with special alloy bushing, assuring a controlled slush action for faster drilling.

This bit, made in both 2-way and 3-way types, offers a material saving in transportation costs for operators outside the United States. One body serves numerous blades, which are readily cut out with a torch and replaced.

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TABLE 11
Repairs to Wells

	Deepen	Plug Back	Squeeze	Acidize	Other
Large-diameter wells....	15	21	22	19	1
Small-diameter wells....	7	22	85	6	7

is a small amount of gas present with this production, which goes through the pump with the liquid. Tubing larger than 3-inch is not necessary with this production, because the load limit of the sucker rods limits the pump to a size that can be run in 3-inch tubing. Wells in this area are equipped with insert or rod-type pumps. A well equipped with 3-inch tubing will have 2½-inch bore pump, and produce approximately 1000 barrels fluid per day. A well equipped with 2½-inch tubing will have a 2-inch bore pump, and produce approximately 700 barrels fluid per day. A well equipped with 2-inch tubing will have a 1¼-inch bore pump, and produce approximately 300 barrels fluid per day.

"Wells in the Oklahoma City field lift practically all oil from a pumping depth of 6300 feet. Static submergence is around 25 pounds; working submergence from 5 to 20 pounds. There is considerable gas with this production. It has been found that a 1½-inch bore pump will secure maximum beam-pumping production at Oklahoma City; and 2½-inch tubing is, therefore, the maximum tubing size required. A well so equipped will pump approximately 500 barrels per day.

"In all capacity beam-pump production, the possibility of the use of casing pumps must be considered. Practically all Oklahoma production has too low a fluid level with too much gas for their satisfactory operation. A few casing pumps are used in Kansas where there are high fluid levels and a small amount of gas. Most operators prefer to have tubing in all hard running beam-pumped wells."

In addition to rod pumps there are numerous other artificial-lifting devices such as electrically-driven well pumps and hydraulic pumping systems which are being used successfully in small-diameter wells. In Kansas, according to one communication, it is common practice to produce 360 barrels of fluid per day through 2-inch tubing, with a hydraulic pumping system. For increased producing rates, when the production ability of the well warrants it, these pumps may be used as a casing-type pump with greatly increased capacity. A 4-inch hydraulic pump, which can be run as a casing-type pump in 5½-inch O.D. casing, is capable of producing 1000 barrels of fluid per day.

It can be concluded that, when maximum volumes of fluid are to be produced by artificial lift, the small-diameter well may prove a disadvantage, because the diameter of the casing limits the size of lifting equipment which may be used. This will be especially true for shallow rod-pump installations. However, according to the questionnaires, the capacity of artificial-lift installations which can be made in the small-diameter wells, in most cases, will be sufficient to meet production requirements.

Lifting Costs

Virtually no data were submitted on lifting costs for either size well, and what were submitted showed the same costs for both the large- and small-diameter wells.

Repairs to Wells

The number of jobs and the kinds of repair work done on the wells reported are shown in Table 11.

It can be seen from this table that relatively little repair work has been done in the fields reported. Comments made on the different types of repairs indicate that large- and small-diameter wells could be plugged back, squeeze-cemented, or acidized with equal ease and effectiveness, but the small-diameter wells could not be deepened or sidetracked successfully.

To supplement this information, a survey was made by a member of the Southwestern District Topical Committee on Production Practice of the repair work being done in the Old Ocean field, Texas. This is a deep field, with numerous high-pressure gas sands, which is now in the process of development. Some companies are completing wells with 5½-inch O.D. casing and others with 7-inch O.D. casing, and considerable repair work has been done to shut off gas and water. Reports were made on 19 repair jobs by 3 different operators; 10 of the jobs were performed on 3 wells completed with 7-inch O.D. casing, and 9 jobs on 9 wells completed with 5½-inch O.D. casing. The jobs done in small-diameter casing were no more difficult than those done in the large-diameter casing, and just as successful.

A summary of the jobs reported from the Old Ocean field is given in Table 12.

What Is the Minimum Practical Casing Size?

This question was asked on the questionnaire, and the answer in each case is the smallest size being used currently in that particular field. In the majority of cases, as has been stated, this was 5½-inch O.D. casing, although in one case it was 4½-inch O.D., and in another case 7-inch O.D. casing. Obviously no arbitrary minimum can be set, as the minimum casing size depends on what is expected of the completed well. If it is anticipated that frequent deepening or sidetracking jobs, or setting long inside liners, or producing large volumes of fluid either by natural flow or artificial lift, will be required, then a larger-size casing will be more desirable than a smaller-size. But if a long flowing life is anticipated, and well repairs will be limited to plug-back and squeeze jobs, and relatively low rates of production are required, then the smaller casings can be used.

For example, in the Ten Sections field in California, according to a communication received, 8000- and 9000-foot wells have been completed by setting 5½-inch O.D. casing on top of the productive zone with a 3½-inch O.D. liner through the 250-foot productive zone, because no serious workover or artificial-lift problems are anticipated. This respondent is even experimenting now in this field by completing wells with 4-inch O.D. tubing for casing.

This is in direct contrast to the program being followed in the Coles Levee field in California. There the productive sands are very thick, and the wells between 9000 and 10,000 feet in depth are being completed as follows, to quote the communication:

"1. In certain flank wells where perforated sections were in the shorter ranges, where these liners were not cemented through perforation, and where anticipated future remedial work consisted mainly of bottom plugging, the most economical program is 7-inch water string and 5½-inch liner.

"2. In all other wells, where liners are long or cemented through perforations, where remedial work

AQUAGEL IN DRILLING MUDS ASSISTS IN OBTAINING SATISFACTORY CEMENT JOBS

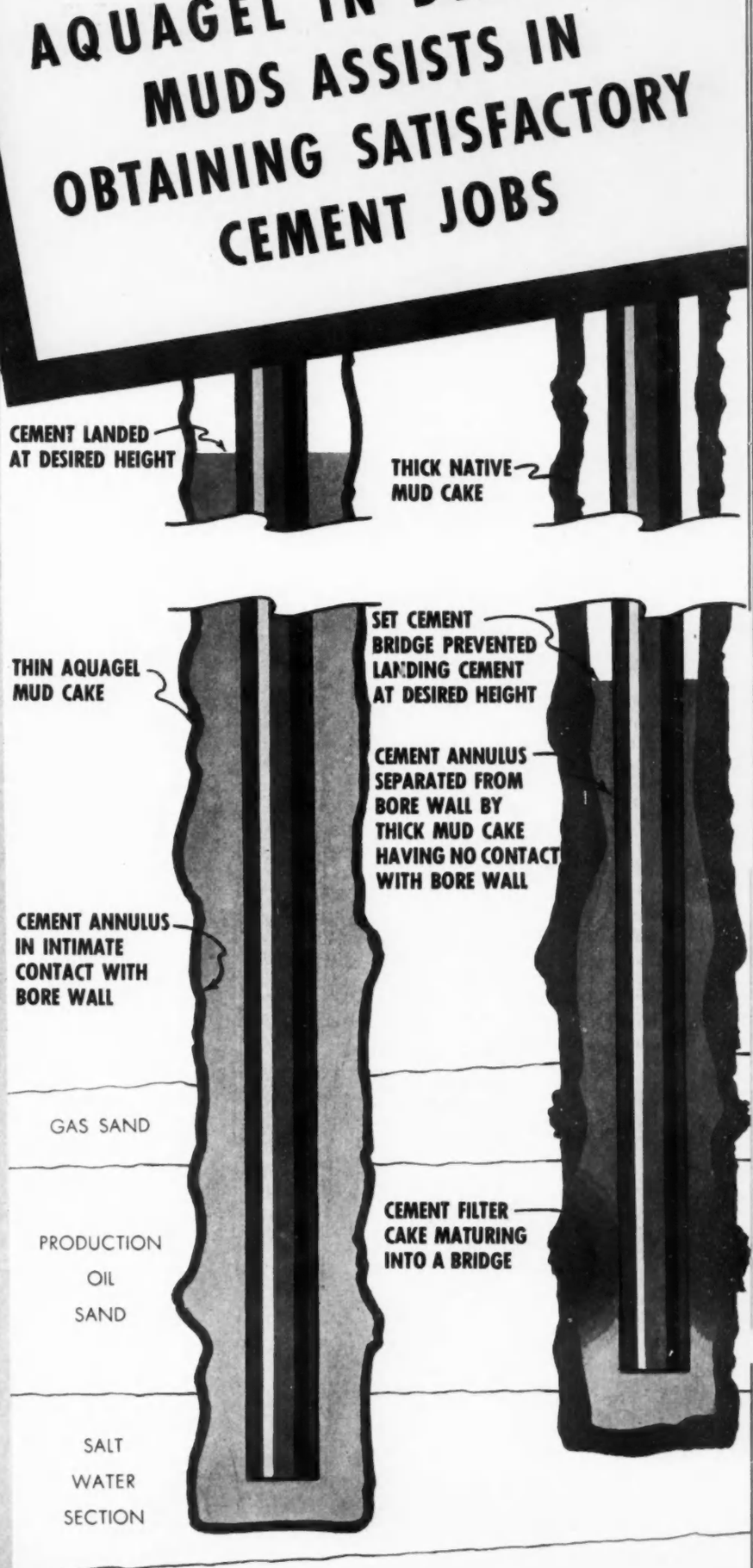
A good mud having a low water loss is essential in securing a satisfactory job in cementing casing.

The mud cake on the walls of the hole should prevent infiltration of water when cement is pumped back of the casing. If this is not the case, water from cement will immediately filter into the formation—dehydrating the cement and causing it to set very rapidly and possibly bridge the hole—in which case the cement cannot be pumped beyond this point.

In a hole drilled with a poor mud, it is almost essential to ream in order to expand the size of the hole and thereby reduce the hazard of landing the casing at the required depth. However, when this is done, infiltration immediately starts.

A hole in which colloidal mud forms a thin, impervious cake (AQUAGEL—and BAROID if required) of suitable characteristics to meet the requirements of a particular well, will require no reaming. Therefore, the mud cake is not disturbed when the cementing operation is started. Water from the cement will not be able to escape into the formation and the original viscosity of the cement will therefore be preserved, enabling the slurry to be pumped as high up back of the casing as desired. A better bond between casing and hole is thereby attained.

AQUAGEL in both drilling mud and cement has many advantages which assist in obtaining satisfactory jobs.


CEMENT LANDED AT DESIRED HEIGHT
THICK NATIVE MUD CAKE
THIN AQUAGEL MUD CAKE
SET CEMENT BRIDGE PREVENTED LANDING CEMENT AT DESIRED HEIGHT
CEMENT ANNULUS SEPARATED FROM BORE WALL BY THICK MUD CAKE HAVING NO CONTACT WITH BORE WALL
CEMENT ANNULUS IN INTIMATE CONTACT WITH BORE WALL
GAS SAND
PRODUCTION OIL SAND
CEMENT FILTER CAKE MATURING INTO A BRIDGE
SALT WATER SECTION

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BAROID PRODUCTS: BAROID AND COLOX, AQUAGEL, FIBROTEX, BAROCO, STABILITE, AQUAGEL-CEMENT, SMENTOX ZEOGEL, IMPERMEX, MICATEX, TESTING EQUIPMENT, BAROID WELL LOGGING SERVICE

TABLE 12
Summary of Some Squeeze-Cement Jobs in the Old Ocean Field

SIZE OF CASING (Inches)	SIZE OF CASING (Pounds)	Depth Squeezed (Feet)	Gun-perforated	Number of Shots	Number of Sacks of Cement	Time Set (Hours)	Maximum Squeeze Pressure (PSI)	Squeezed With	RESULTS
7	28	10,132-164	Yes	....	45	60	4,500	Tubing	* Not successful
7	28	10,132-153	Yes	....	60	54	4,900	Tubing	* Not successful
7	28	10,150-153	Yes	8	10	60	5,000	Tubing	* Not successful
		10,132-139	Yes	34	....	..	....	Tubing	* Not successful
7	28	10,132-139	Yes	28	10	48	5,000	Tubing	* Not successful
7	28	10,132-137	Yes	9	17	..	4,800	Tubing	* Not successful
7	28	9,712-15	Yes	12	55	..	4,600	Tubing	Successful
7	26	10,165-115	Yes	240	185	48	4,500	Tubing	Successful
7	26	10,076-80	Yes	16	75	67	4,000	Tubing	Successful
7	26	10,106-125	Yes	72	128	61	4,100	Drill Pipe	Successful
7	26	10,510-515	Yes	20	92	30	4,200	Drill Pipe	Shut off gas
5½	17	10,115-155	Yes	240	145	48	5,700	Tubing	Successful
5½	17	10,150-155	Yes	15	95	36	5,000	Tubing	Successful
5½	17	10,150-155	Yes	15	90	36	5,000	Tubing	Successful
5½	20	11,011-014	Yes	9	15	36	5,000	Tubing	Successful
5½	17	10,132-142	Yes	60	25	36	5,200	Tubing	Water reduced
5½	17	10,070-75	Yes	15	46	72	5,900	Drill Pipe	Reduced gas-oil ratio
5½	17	10,053-58	Yes	15	40	48	4,500	Tubing	Reduced gas-oil ratio
5½	17	10,160-65	Yes	15	50	72	4,200	Tubing	Reduced gas-oil ratio and shut off water
5½	17	at 7,586 between 5½-in.-O.D. liner & 8⅝-in.-O.D.	No	....	....	..	2,900	Drill Pipe	Successful

* The first six jobs are on the same well. Well finally plugged back and recompleted in an upper sand.

to correct encroachment of gas or water or the opening up of another zone may be a possibility, an 8⅝-inch to 6⅝-inch is the most preferable."

It appears, with present methods and equipment available, that the 5½-inch O.D. casing is near the minimum casing size practical to use if a reasonable freedom of operation with the well is desired.

Casing smaller than 5½-inch will not permit the use of 2-inch external-upset tubing as a flow string if sufficient room is to be allowed for a wash-over string in the event the tubing becomes sanded up. This casing (5½-inch) is also the smallest size which will accommodate the use of 2⅞-inch O.D. external-upset drill pipe. All the different tools for completion and repair, such as gun perforators, underreamers, bridge plugs, cement retainers, testing tools, suction bailers, and well-logging devices, are made to operate as successfully in 5½-inch O.D. casing as in the larger sizes of casing. Some of the tools are available in sizes smaller than those used in 5½-inch O.D. casing, but because of their small size are rather delicate and subject to failure.

Conclusion

The foregoing data and comments, although inadequate for a comprehensive analysis of the problem, permit the following conclusions to be drawn:

1. Small-diameter wells are substantially lower in cost than large-diameter wells, in every field on which information was submitted.

2. A small-diameter well is considered to be one completed with 5½-inch O.D. casing. This is considered the minimum practical size for well completion by the majority of those submitting data. However, wells are being completed with smaller sizes as an experiment.

3. There was no difference in potentials between small- and large-diameter wells when taken on chokes ¼-inch in diameter or smaller.

4. Small-diameter wells can be completed by all common completion methods as easily as large-diameter wells.

5. All types of artificial-lift equipment can be used satisfactorily in small-diameter wells. If large volumes of fluid are to be produced, especially with rod pumps, the small-diameter wells may impose some restriction.

6. Small-diameter wells can be repaired as easily and cheaply as large-diameter wells except when it is desired to deepen or sidetrack wells. For these two exceptions the small-diameter well is not satisfactory.

7. In view of the current low rates of production, the long expected flowing life of most fields, and the attractive savings realized, the trend toward drilling and completing small-diameter wells probably will continue.

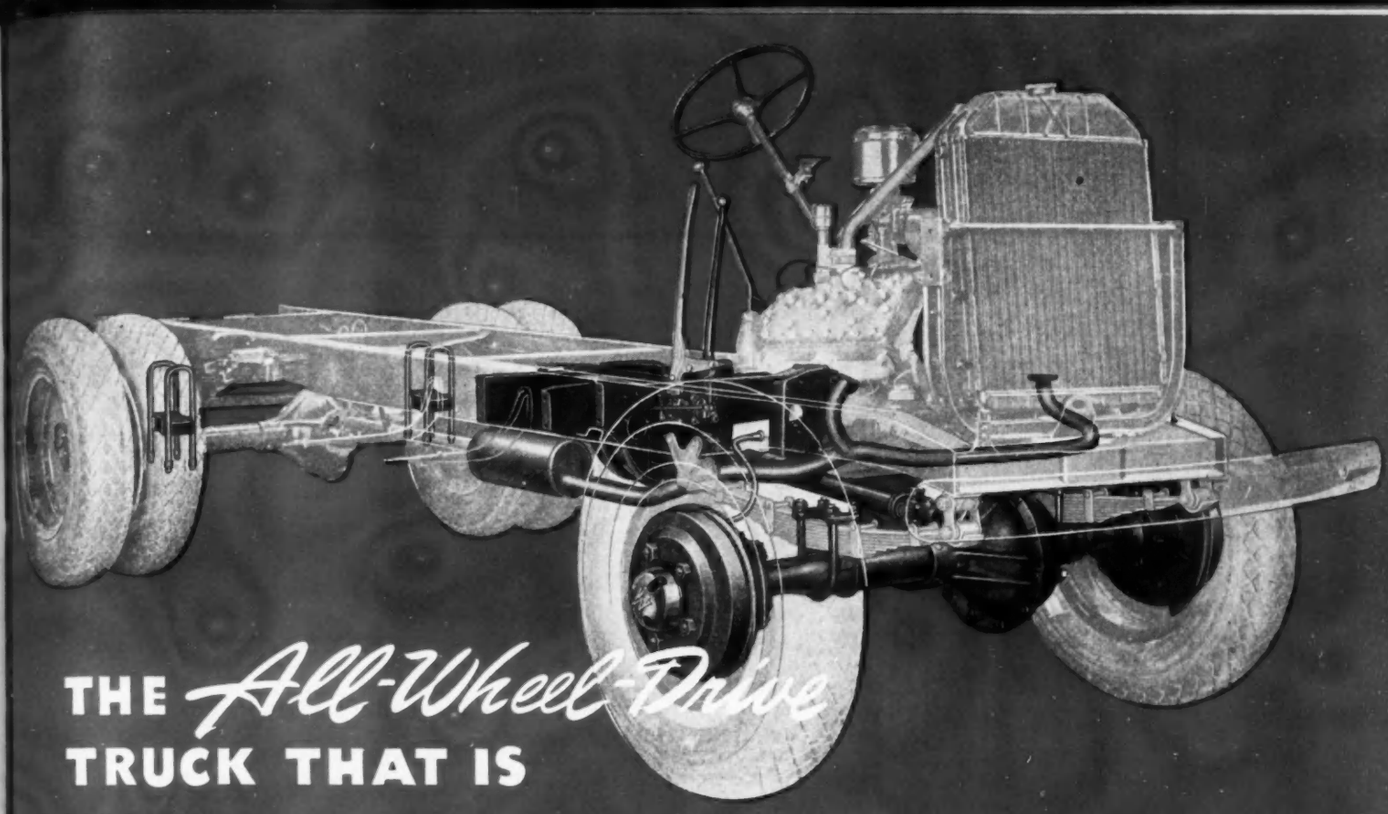
8. It should be pointed out, in closing, that the scope of this paper has been limited to the presentation of the actual experience of the industry to date in drilling and completing small-diameter wells as it affects costs and operation. No effort has been made to determine or discuss the effect the small-size hole through the producing horizon has either on the productive capacity of the well or the effect it may have on ultimate recovery. This controversial subject has been discussed in other papers by competent authorities.[6,7]

Acknowledgment

The Southwestern District Topical Committees on Drilling Practice and Production Practice wish to acknowledge the valuable assistance and cooperation of the membership of the other topical committees on drilling practice and production practice in furnishing data and opinions, without which this paper could not have been prepared.

References

[1] I. W. Alcorn, paper presented at Los Angeles meeting of Am. Inst. Mining Met. Engrs., Oct. 1940. *Trans. Am. Inst. Mining Met. Engrs. (Petroleum Development and Technology)* **142** (1941).
[2] R. J. S. Pigott, "Mud Flow in Drilling," *Oil Gas J.* **40** [2] 62 (1941).
[3] R. W. McIlvain, Jr., "Developments in Drilling Practice in the Eastern District," *Proc. API* **20** [IV] 84 *(Production Bull. No. 224)* (1939).
[4] H. B. Hill, E. L. Rawlins, and C. R. Bopp, "The Oklahoma City Field, Oklahoma," *Bur. Mines Rept. Investigation 3330*, Jan. (1937).
[5] Personal communication to author from H. F. Beardmore, Amerada Petroleum Corp., Tulsa, Okla.; chairman Mid Continent District Topical Committee on Production Practice.
[6] L. C. Uren, J. Domercq, Jr., and J. Mejia, "Influences of Well Diameter upon the Pressure Gradient and Rate of Flow of Oil Through the Reservoir Rock in the Vicinity of a High-Pressure Flowing Well," *Trans. Am. Inst. Mining Met. Engrs.* (1935).
[7] Ernest K. Parks, "Effect of Varying Well-Bore Diameters in California Reservoirs," *Drilling and Production Practice, American Petroleum Institute*, New York, 252 (1939).



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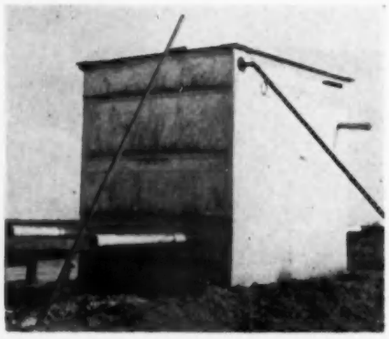
Practical Operating Hints for

1. WATER SUPPLY

Raised Handles Equip Tank for Quick Moves



Welded into container, these supports span truck gap and expedite unit shift.

HAVING on hand a large rectangular steel tank for holding fresh water at his drilling locations, one West Texas operator solved the problem of handling and moving the somewhat cumbersome tank.

Two holes were cut through opposite sides of the tank, and joints of drill pipe were run through them and welded in place so that their ends projected equal distances from each side of the tank. The holes were cut out of the tank at a height above the ground level a foot or 18 inches lower than the bed level of the truck and trailer which haul it from one location to another.

When the tank is to be moved, one side is jacked up, and the truck trailer is backed under the projecting pipe ends on that side as far as it will go. After that side is let down and lashed to the trailer bed, the truck is then backed under the pipes on the other side. With the drill pipe ends securely fastened between the truck and trailer, the tank actually serves as a trailer hitch, and it can be transported about the lease with ease and with a minimum of time and effort, as compared to that required when a tank is bodily skidded upon a truck bed.

Another advantage of this method of transporting tanks is in the simplification of setting the tank upon the previously prepared elevated location that usually is provided for water tanks in this area. The truck can be driven across the pile of earth, stopping just beyond to allow the tank to be lowered. This same idea may be easily adapted to almost any type of medium sized tank, whether it is round or square.

2. PIPE HANDLING

Car Power Parbuckles Heavy Casing to Rack

TO reduce the labor required for unloading pipe from trailer to top of the pile, a pick-up truck or passenger car may be used to supply the needed power and also speed pipe handling.

By mounting a snatch block at the back of the pipe rack, and high enough to clear the rows of pipe, a soft laid line may be tied below the pipe, looped around the next joint of pipe as it is rolled from the trailer onto the skids, and hooked to an eye in a wire line running through the snatch block. The outer end of the wire line is tied to the bumper of pick-up or car, and the vehicle driven away at signal, taking up on the soft line and rolling the pipe, through the parbuckle action, onto the rack and giving it impetus enough to carry it across the blocks to contact units already stored.

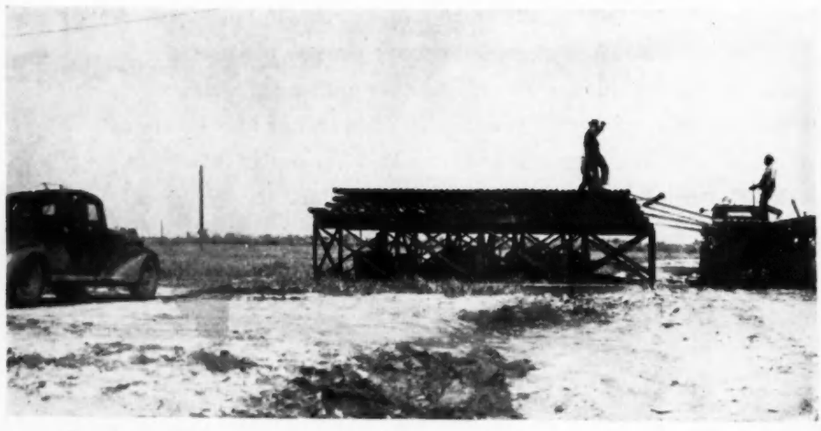
Unhooking the soft line enables it to be thrown back to the men at the rack and there passed around the next joint as the man on the pipe carries the looped end of the wire line back as the motivating vehicle returns to its initial position.

3. SALVAGE

Special Boxes Garner WasteforReclamation

IN AN effort to prevent loss and waste of all steel materials in the field, a large California company recently has adopted the practice of setting up a large, steel-reinforced salvage box at a convenient point near each drilling well. Into this box are thrown all broken or discarded iron and steel materials of all kinds, rotary chains, steel plate, castings, and small nuts and bolts.

The heavy box, having the approximate dimensions of 4½ by 2½ feet, and a foot deep, is set in an out-of-the-way place where it can be reached by the service truck for removal to the salvage warehouse. When the box becomes full it is replaced by an empty one. The word "salvage" is painted on the sides of the box in large clearly visible letters, so that its presence



Snatch block and soft line at center of joints apply power to transfer of pipe from trailer to elevated rack storage, eliminate hand labor and reduce accident hazard.

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

THE DRILLING RIG . . .

Heavy boxes, clearly marked, simplify classification and removal of scrap as it accumulates around rig; requires no needless search for repairs in case of damage.

is evident to every member of the crew.

Aside from the beneficial effect created in making the company employes salvage conscious and preventing the loss of much valuable steel material, the creation of a centralized point for tossing discarded materials eliminates much lost time in drilling. Whenever repairs or replacement of parts is necessary, there is no waste time caused by needless sorting and handling of already discarded materials.

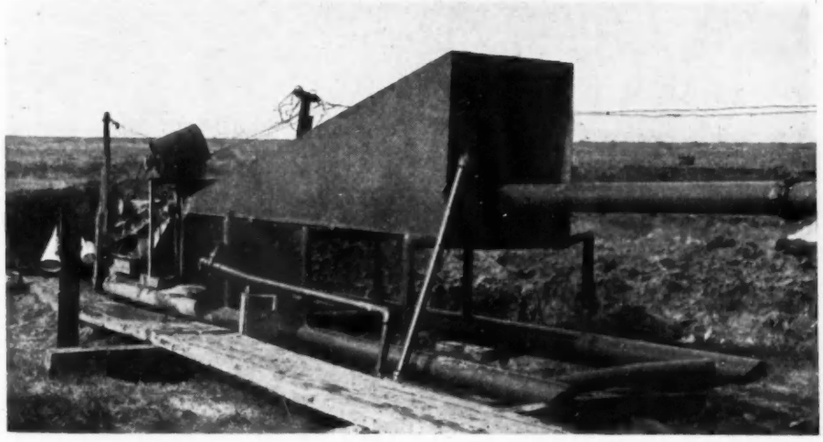
4. GAS REMOVAL

Muffle Unit Separates Mud From Waste

TO PREVENT excessive loss of drilling mud, through spattering when pockets of gas escape from the mud on reaching the surface, one West Texas contractor equips each of his shale shakers with a long, sheet metal tunnel into which the mud line is directed just ahead of the shaker. Approximately 12 feet long, the tunnel tapers from the upstream aperture approximately three feet square, to a narrow, 6-inch high opening at the shale shaker apron.

Mud is led to the shaker through light-weight casing, so that any pockets of gas in the mud returns are confined until they reach a point about two feet inside the housing, where their effect is muffled.

The entire combination, including the shaker and metal housing, is mounted on a single skid of tubular material. The skids are 6-inch casing, and the tunnel is mounted at the proper height on 2-inch pipe stilts welded to the skids. Moving of the unit between locations is relatively simple.

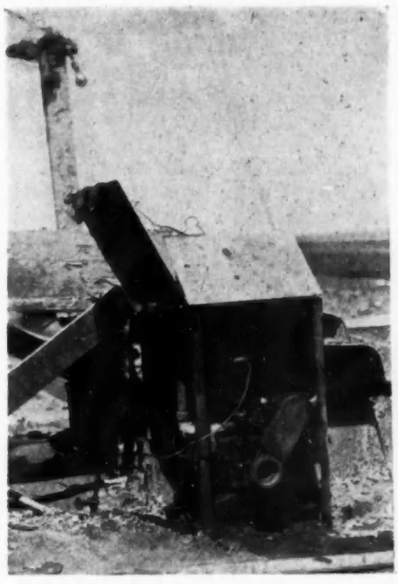


Spatter and blow of gas escaping from mud stream are snubbed by tapered box tending to establish counterflow away from shaker and maintains cutter stream flow.

The housing is provided with the proper tilt, so that the mud will flow out in a wide stream on approaching the shaker. This extra travel of the mud further helps occluded gas to escape and permits the mud to become more stabilized. For severe gas conditions the tunnel is provided with a door or panel that can be hung in place over the large upstream opening.

5. EQUIPMENT CARE

Shaker Engine House Keeps High Output

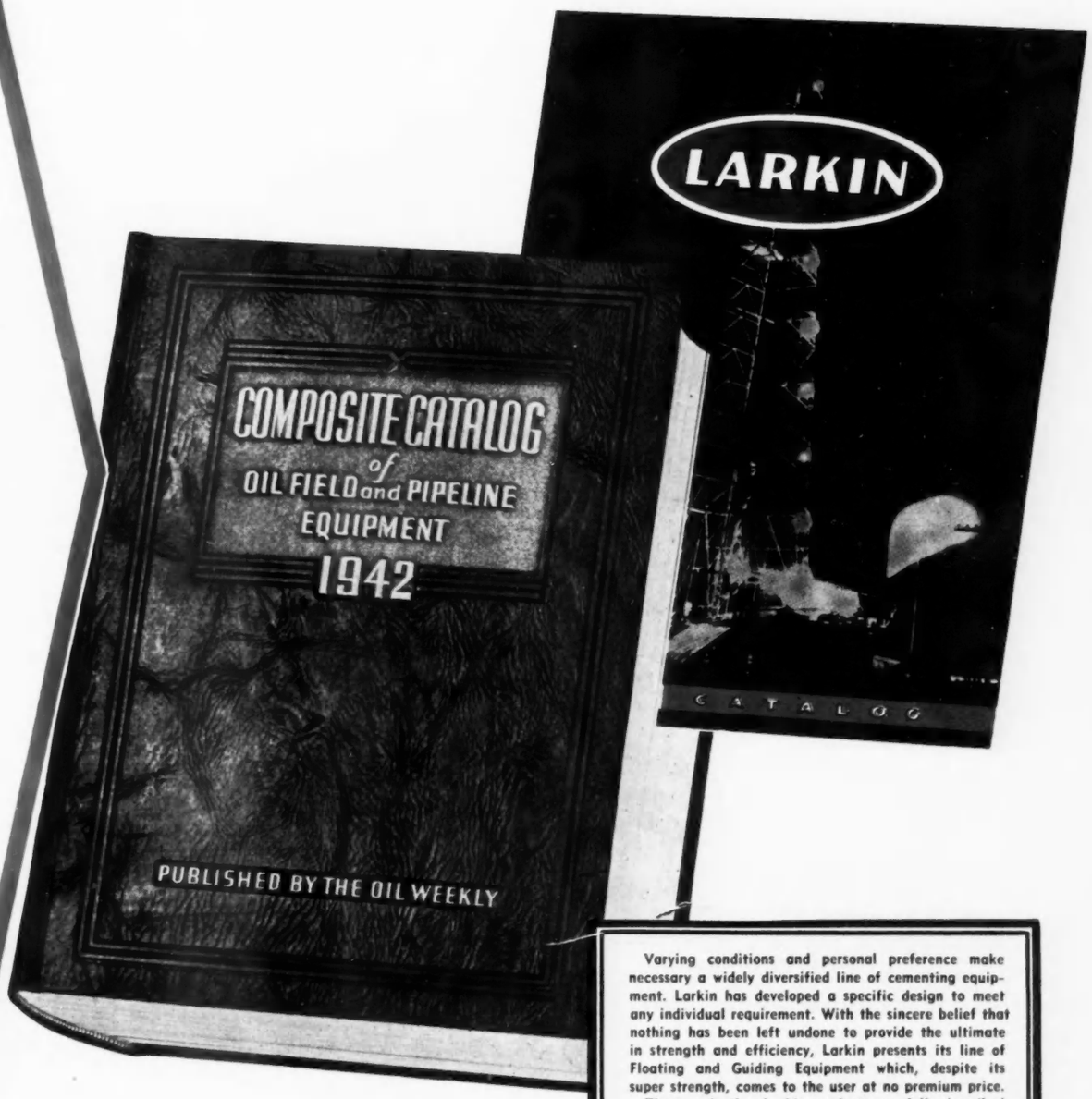


Hinged sides under peak roof permit closure against weather or mud damage.

ADEQUATE protection from the elements will more than double the operating life of small high-speed equipment. A gas engine, used in conjunction with a vibrating screen type shale shaker, is surrounded by a metal frame 3 feet in height and 1¼ feet in width, on which four metal drop sheets, hinged from the top, may be lowered during unfavorable weather.

The unit is securely bolted to a wooden foundation and may be easily transported from location to location. Motor is versatile and can operate on gas or gasoline. Olson Drilling Company in the Guthrie pool, Logan County, Oklahoma, used this drive on a rotary.

There's a LARKIN *Product For Every Cementing Condition*



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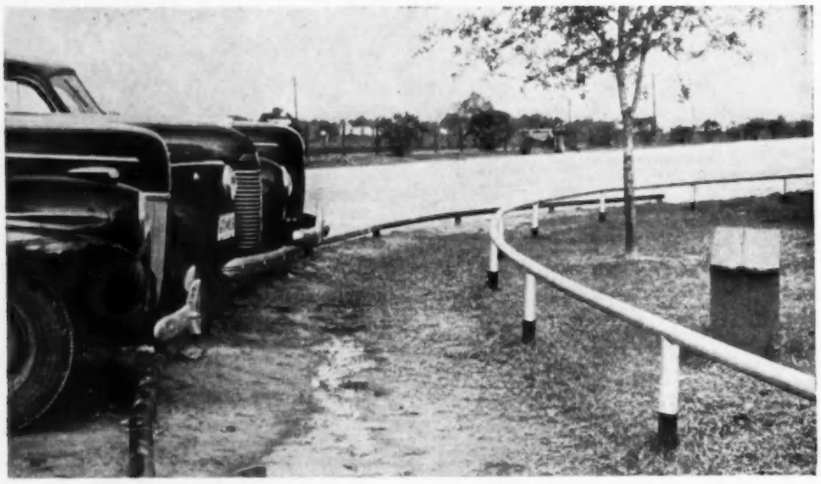
Practical Operating Hints for

1. TRAFFIC CONTROL

Snubbing Rail Prevents Driving or Parking Across Space for Walk and Insures Neatness



An all-welded stop, set below bumper clearance levels, affords alignment point for parking of vehicles and insures ample clearance for the path and yard trim.

To prevent property damage in the parking area in front of the field office, one company constructed an auxiliary railing a few inches high, forming a barrier to cars driving into the parking lot. This prevents driving into the shallow ditch which runs directly before the railing, to become stuck or to stir up mud to such extent that the space in front of the office becomes unsightly. It also prevents damage to the main rail fence.

The guard rail is made of 2½-inch pipe, and is mounted on short supports made of the same material. The supports are grooved on top to permit the rail to be set into the saddle thus formed, and are welded in this position. The supports are driven into the ground sufficiently to furnish adequate strength and to provide an obstacle about six inches high. The rail is parallel to the main rail fence, and about eight feet in front of it.

The main fence is about 18 inches high, and is neatly painted a light color except for the bottom few inches of the legs which are black to conceal dirt. Provision of the auxiliary fence helps maintain the rail in this order, supplying a means to preserve appearance of the camp.

Curved line of stop assists in distributing car impact.

2. WHEEL STOPS

Half Sections of Pipe Serve as Chock Blocks

As a guard against the possible loss or damage of expensive equipment, or even injury to workmen, one company, in a field noted for its irregular, and in some cases quite steep terrain, uses wheel stops made from 12-inch sections of 6- or 8-inch casing cut in half longitudinally, which are placed under the rear wheels whenever the vehicle stops for any length of time, such as during a servicing or pulling job. These stops take up far less room in the truck than do the customary wooden blocks, and are less likely to be lost or misplaced. They also serve the purpose better since they project farther under the wheel, while at the same time having the desired total height, which prevents the vehicle from starting to roll back.

By drilling a small hole in the edge of one end of each chock, and attaching a length of soft rope to it, the wheel stops may be more easily handled.

Presenting a rounded surface to the truck tires, sections of half-round pipe effectively dig in and maintain parked trucks at desired position on slopes.

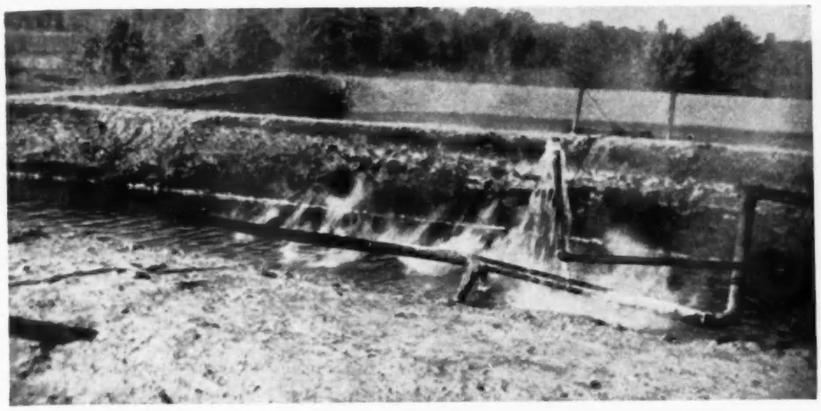
3. BRINE DISPOSAL

Waste Gas Evaporator Handles Saline Output

To utilize waste gas in the disposal of salt water it is necessary to be able to control the position of the flare over the heating pit, both as to vertical height above the water and for horizontal changes necessitated by the salt deposit building up under the flare.

In the Magnolia field one company effects evaporation economically with a device requiring the services of but one man to regulate or shift it. A joint of 4-inch line pipe is perforated for 18 feet and the open end plugged. Two pieces of 2-inch pipe about 4 feet long are welded to the 4-inch burner line at an angle of about 70 degrees with

THE PRODUCTION MAN . . .



Adjustable rack supports perforated burner pipe over pit and insures maximum flame effect in reducing brine volume while removing waste gas products.

each other, with a third section of 2-inch joining these braces at the bottom.

A guy line is attached to the braces (under water to prevent their being burned in two) and run to each side of the pit and there attached to a simple windlass made of a piece of 4-inch pipe positioned by two stakes and using a chain tong as brake.

By taking up on the guy line the position of the supporting brace is shifted in the pit, the burner section pivoting on the ell by which it is attached to the waste gas line. —*W. C. Best, Shreveport, La.*

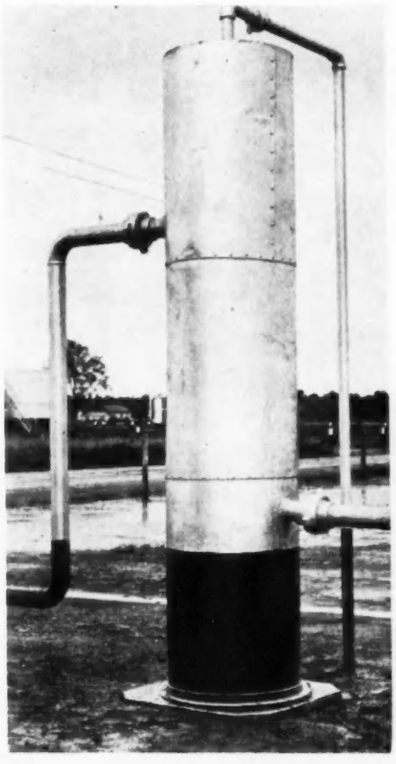
4. GAS HANDLING

Stack Separates Flow From Water Well

TO remove the hazard of gas used to flow a water well, a simple separator may be made from a boiler stack to segregate gas and water and to allow piping the former a safe distance for disposal. Such a separator stands about ten feet high, and the body, being cylindrical and made of boiler stack material, is of large diameter. The apparatus is set on a small concrete base near the water well.

A short 4-inch nipple equipped with a union is welded into the separator wall three feet from top, comprising the line through which all well fluid enters. The top, sealed by means of a circular plate of proper diameter welded to the steel frame, is similarly equipped with a 2-inch outlet pipe, also fitted with a union. Through the pipe all gases are expelled after separation, the connecting line conveying them to a distant point for burning.

Three feet from bottom, a 4-inch pipe leaves the separator opposite



Light steel column affords separation space for clearing gas-lifted fluid.

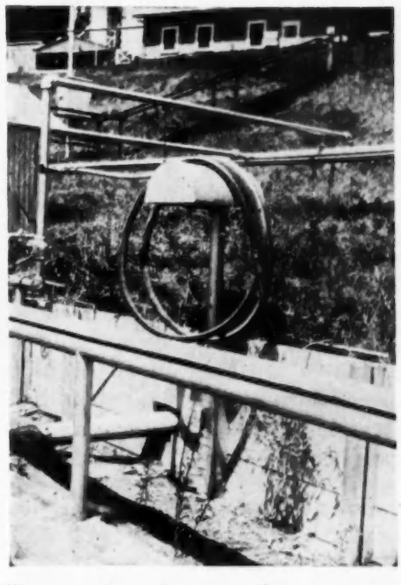
the inlet pipe, and is equipped on the inside with an ell and a nipple two feet long, turned downward, to provide an inner fluid seal, the lower portions being filled with water and bottom of the pipe beneath the water level. This prevents gas leaving by the lower line, forcing all vapors to exhaust from top. Water is drained through a lower line.

5. HOSE CARE

Curved Rack Prevents Kinking or Damage

A NEAT and orderly method for keeping flexible service and loading hoses coiled and free from kinks, is cheaply accomplished by using a short length of discarded casing. An 18-inch length of 14-inch diameter oil well casing is cut into halves lengthwise with a torch and one half flattened out by heating and pounding. From this flat piece, semi-circular ends are cut and welded to the other half-round piece of casing. A suitable support of 2- or 3-inch pipe is welded to the inside of the half-round casing and the other end sunk into the ground.

By keeping one end of the hose attached and large loose coils placed on the rack, much time is saved and the ease with which the hose may be recoiled, encourages replacement after use. Keeping expensive, thick, flexible hose from resting on sharp edges of metal, adds extra life in well-kept hose which more than justifies the small amount of welding and material required to construct the rack.—*Ralph L. Fowler, Alhambra, Calif.*



Pipe section forms rack to protect hose against damage while in storage.

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Drilling Sharply Reduced Under New Restrictions

Although governmental restrictions have forced numerous drilling rigs and drilling crews into idleness during the past month, the effect has not yet been sharply reflected in statistics on well completions. The restrictions are evidenced, however, in the number of rigs in operation as of February 1, which is down steeply from the number as of January 1.

Wells actually drilling in the United States on February 1, exclusive of those rigging up or temporarily shut down, totaled only 2659, against 3453 (revised total) reported as of January 1, a decrease within the month of 794 rigs or 23 percent, which could be explained only in small part by influence of weather conditions.

Especially drastic was the curtailment of activity in Texas, where there was a decrease of 27 percent in wells actually making hole between January 1 and February 1, the total having dropped by 285 wells, from 1085 to 802. All sections of the state have materially fewer wells drilling now than a month ago.

From a percentage standpoint, the curtailment in Illinois has been even more important than that in Texas, the Illinois development having been cut by 57 percent between January 1 and February 1, as wells actually drilling dropped from 298 to 129.

Other decreases included those from 190 to 151 in California, from 198 to 167 in Kansas, from 256 to 236 in Oklahoma, from 87 to 79 in New Mexico, from 120 to 113 in Michigan, from 17 to 12 in Mississippi, from 123 to 111 in South Louisiana, from 64 to 34 in North Louisiana, from 23 to 17 in Arkansas, from 7 to 4 in Colorado, from 37 to 16 in Montana, from 28 to 27 in Wyoming, from 59 to 51 in Indiana, from 33 to 24 in Kentucky, from 213 to 200 in Ohio, from 225 to 209 in West Virginia, from 80 to 72 in New York, and from 290 to 191 in Pennsylvania.

Similarly, wells rigging up in the United States as of February 1 totaled only 343, compared with 389 on January 1, while derricks up for new wells decreased to 216 from 324 and new locations declined to 1191 from 1464. Conversely, wells reported as shut down increased to 814 from 743.

STATE OR DISTRICT	TOTAL RIGS IN OPERATION (Drilling, Rigs Up, Shutdown)				DETAILS OF FEBRUARY 1, 1942 FIELD ACTIVITY					
	Year Ago: Feb. 1, 1941	Month Ago: Jan. 1, 1942	Now: Feb. 1, 1942	Percent Change From Year Ago	Rigs in Operation			Prelim. Activity		Total Operations
					Drilling	Rigs Up	Shutdown	Derricks	Locations	
Alabama	4	6	5	+ 25.0	1	....	4	....	....	5
Arizona	7	....	....	....	....	....	....	....	....	....
Arkansas	27	30	30	+ 11.1	17	3	10	8	4	42
California	255	297	248	— 2.7	151	52	45	....	113	361
Colorado	31	23	20	— 35.4	4	....	16	....	1	21
Florida	2	2	1	— 50.0	....	....	1	....	....	1
Georgia	2	2	....	....	....	....	....	....	....	....
Illinois	293	377	215	— 26.6	129	22	64	....	24	239
Indiana	99	67	56	— 43.4	51	1	4	....	22	78
Iowa	3	....	1	— 66.6	1	....	....	....	....	1
Kansas	237	235	201	— 15.1	167	7	27	30	35	266
Kentucky	48	39	29	— 39.5	24	1	4	....	3	32
Louisiana	190	234	178	— 6.3	145	13	20	25	79	282
North Louisiana	63	92	55	— 12.6	34	6	15	18	....	73
South Louisiana	127	142	123	— 3.1	111	7	5	7	79	209
Michigan	122	172	175	— 43.4	113	16	46	19	53	247
Mississippi	14	28	23	+ 64.2	12	3	8	2	3	28
Missouri	14	8	6	— 57.1	1	....	5	....	....	6
Montana	63	76	63	....	16	5	42	....	3	66
Nebraska	26	22	25	— 3.8	6	4	15	4	1	30
New Mexico	101	124	119	+ 17.8	79	7	33	....	14	133
New York	34	125	125	+ 267.6	72	20	33	7	18	150
Ohio	226	295	276	+ 22.1	200	28	48	18	46	340
Oklahoma	314	302	324	+ 3.2	236	18	70	23	44	391
Oregon	2	....	....	....	....	....	....	....	....	....
Pennsylvania	325	403	300	— 7.6	191	62	47	18	46	364
South Dakota	....	1	2	....	....	....	2	....	....	2
Tennessee	11	7	5	— 54.5	3	....	2	....	1	6
Texas	1,068	1,346	1,039	— 2.7	802	49	188	43	623	1,705
East Texas Border Co.'s	11	10	12	+ 9.0	6	2	4	1	....	13
East Texas Field	28	9	3	— 89.2	....	....	3	....	....	3
Rest of Eastern Texas	56	75	64	+ 14.2	46	6	12	7	4	75
North Texas	192	169	139	— 27.6	89	10	40	6	207	352
West Central Texas	98	80	66	— 32.6	39	5	22	2	25	93
West Texas	288	385	352	— 22.2	295	9	48	8	234	594
Texas Panhandle	85	150	99	+ 16.4	83	6	10	3	21	123
Gulf Coast, Upper	65	132	100	+ 53.8	89	4	7	10	69	179
Gulf Coast, Lower	130	185	121	— 6.9	104	3	14	2	28	151
Southwest Texas	69	92	42	— 39.1	30	2	10	2	21	65
South Central Texas	46	59	41	— 10.8	21	2	18	2	14	57
Utah	4	4	4	....	2	....	2	....	....	4
West Virginia	234	311	296	+ 26.4	209	29	58	19	57	372
Wyoming	58	49	50	— 13.7	27	3	20	....	1	51
Total United States	3,814	4,585	3,816	+ 0.1	2,659	343	814	216	1,191	5,223

STATE OR DISTRICT	Total Monthly Completions				Details of Completions in January, 1942					
	[2]Year Ago (January, 1941)	[3]Month Ago (Dec., 1941)	[1]Latest Data (January, 1942)	Percent Change From Year Ago	New Wells Drilled for Oil or Gas				Old Wells Drilled Deeper	Total Footage Drilled
					Oil	Gas	Dry	Others		
Alabama	....	....	2	....	....	....	2	....	....	654
Arkansas	14	10	8	— 42.8	6	....	2	....	....	51,636
California[4]	110	74	86	— 21.8	78	4	4	....	....	481,993
Colorado	....	3	....	....	....	....	....	....	....	....
Florida	....	....	....	....	....	....	....	....	....	....
Georgia	....	....	....	....	....	....	....	....	....	....
Illinois	239	341	271	+ 13.4	182	1	82	....	6	721,525
Indiana	35	54	20	— 42.8	12	3	5	....	....	31,470
Iowa	....	....	....	....	....	....	....	....	....	....
Kansas	139	190	180	+ 29.4	106	12	52	1	9	513,949
Kentucky	19	31	11	— 42.1	5	....	6	....	....	13,359
Louisiana	99	154	94	— 5.0	63	1	30	....	....	567,313
North Louisiana	38	81	36	— 5.2	19	1	16	....	....	112,101
South Louisiana	61	73	58	— 4.9	44	....	14	....	....	455,212
Michigan	54	107	64	+ 18.5	39	8	17	....	....	151,268
Mississippi	11	7	20	+ 81.8	11	....	9	....	....	104,131
Missouri[5]	5	8	2	— 60.0	....	1	1	....	....	1,684
Montana	8	43	17	+ 112.5	9	6	2	....	....	42,928
Nebraska	12	8	7	— 41.6	4	....	3	....	....	19,084
New Mexico	21	59	31	+ 47.6	22	....	9	....	....	81,303
New York	43	172	99	+ 130.2	59	....	....	40	....	120,330
Ohio	105	168	105	....	24	37	37	1	6	215,897
Oklahoma	163	207	180	+ 10.4	93	12	57	....	18	535,092
Pennsylvania[6]	245	308	231	— 5.7	97	23	3	105	3	394,740
South Dakota	....	....	....	....	....	....	....	....	....	....
Tennessee[7]	1	1	1	....	....	....	1	....	....	800
Texas	593	1,016	716	+ 20.7	515	21	152	9	19	2,647,575
E. Texas Border Co.'s	....	2	1	....	....	1	....	....	....	4,950
East Texas Field	51	14	8	— 84.3	7	....	....	1	....	25,308
Rest of Eastern Texas	22	69	46	+ 109.0	32	2	12	....	....	221,228
North Texas	124	230	143	+ 15.3	85	....	48	2	8	306,780
West Central Texas	36	66	32	— 11.1	17	....	13	....	2	54,818
West Texas	119	272	200	+ 68.0	168	3	22	....	7	794,935
Texas Panhandle	32	85	66	+ 106.2	51	11	4	....	....	199,055
Gulf Coast, Upper	54	59	61	+ 12.9	44	2	13	2	....	329,620
Gulf Coast, Lower	82	122	93	+ 13.4	71	1	16	3	2	528,350
Southwest Texas	49	67	52	+ 6.1	33	1	17	1	....	166,408
South Central Texas	24	30	14	— 41.6	7	....	7	....	....	16,123
Utah	....	....	....	....	....	....	....	....	....	....
West Virginia	60	101	54	— 10.0	12	27	7	....	8	111,469
Wyoming	4	14	7	+ 75.0	6	....	1	....	....	25,134
Total United States	1,980	3,067	2,206	+ 11.4	1,343	156	482	156	69	6,833,334

[1] Wells completed 4 weeks, or 28 days, ended January 24, 1942.
[2] Wells completed 4 weeks, or 28 days, ended January 25, 1941.
[3] Wells completed 5 weeks, or 35 days, ended December 27, 1941.
California figures from the American Petroleum Institute, except for January, 1942.
[5] Figures from Missouri Geological Survey.
[6] Bradford, figures from The Producers Monthly.
[7] Figures from Tennessee Division of Geology.

Scrap Collection Program Urged by Coordinator

By ELTON STERRETT
Equipment Editor

THE immediate undertaking, by the petroleum industry, of a steel salvage and equipment rehabilitation program is being urged by Petroleum Coordinator Harold L. Ickes. Pointing out that there is a vital need for scrap iron and steel to supplement present war effort, Coordinator Ickes stated that literally thousands of tons of valuable scrap could be assembled by the oil industry and turned back into the channels of trade.

"Every producer, every refiner, and, in fact, every person engaged in the industry, regardless of his position," the coordinator said, "should make it his patriotic duty immediately to bring to commercial channels the maximum possible tonnage of scrap which is not, and cannot be, employed by the oil industry.

"I cannot overemphasize the importance of carrying out such a program thoroughly and promptly. All material possible should be salvaged, and salvaged at once."

Scope of Program

Deputy Coordinator Ralph K. Davies, in outlining the scope of the projected program, was of the opinion that it would probably range from the rather simple operation of gathering discarded scrap to the extreme of digging up unused pipe lines and cutting up of obsolete refining units.

He recommended that the industry undertake concurrently to rehabilitate units which can be made serviceable by new parts or minor repairs and thus eliminate the need for new similar units, the manufacture of which would require long hours of machine operation. This phase of the program will tend to reduce industry requirements for critical materials which, in many cases, conflict directly with the manufacture of guns, tanks and other war material.

Prospective big yields of scrap tonnage, Davies continued, could be expected from such items as old and unserviceable tanks, obsolete tools, drill collars and other articles made out of alloy steels, old tool joints and wire rope, bent sucker rods, and structural steel which cannot be straightened.

Full industry cooperation in the salvage and rehabilitation program has been requested, he continued, in letters to the chairmen of the general, production and refining committees in each of the five districts which comprise the entire nation.

Groundwork for such a concerted effort had been laid earlier by the coordinator's office in a recommendation that stocks of used materials should be carefully analyzed to segregate items which could be reclaimed and placed in service from those which were entirely unserviceable through wear, breakage or obsolescence. As a result, several committees have already initiated constructive scrap-collection programs from which tonnage in volume is being secured.

IN an effort to further the important and vital program of scrap collection in the oil industry, The Oil Weekly has initiated a special editorial program, under the direction of Elton Sterrett, Equipment Editor, designed to promote this work. Each week readers will be informed of developments in the scrap and material conservation program and special feature articles will be presented to show methods and practices developed by various operators to effectuate this work. Contributions and suggestions to this department will be appreciated.

PUSHES *Scrap* DRIVE

CHARLES F. ROESER

Charles F. Roeser, Fort Worth, who has been named chairman of the Texas Mid-Continent Oil and Gas Association drive for collection of scrap metal and rubber in the oil industry. The drive has been extended by the chairman to include all the states incorporated in district III of the national petroleum set-up, and includes Louisiana, New Mexico, Arkansas, Mississippi and Alabama with Texas. Organization of committees and planning of local and group plans have been inaugurated.

★ *Get in the Scrap* ★

Having gotten into the present scrape through scrapping our scrap, it now appears that it's going to be necessary to scrape for scrap to win our scrap.

Scrap Collection Week

OFFICIAL oil industry scrap collection week was designated Saturday as February 22-28 by Charles F. Roeser of Fort Worth, chairman of the drive and also of District 3 of the Office of Petroleum Coordinator for National Defense. The drive is being organized by the Texas Mid-Continent Oil and Gas Association at the request of the federal government.

The week set aside for collection of the oil industry's scrap metals and rubber will open with Washington's birthday and end with the month, Roeser said. However, in all areas the scrap will have to be piled at convenient loading places at the operator's leases, yards and plants well in advance of that time. Then it can be trucked into collec-

tion centers and dumped there as arranged by county collection chairmen.

Chairmen and in some cases co-chairmen were named Saturday by Roeser for all principal Texas oil-producing counties. Letters of notification will go out within a few days. Members of the state collection committee also were named.

Under the plan of organization worked out by the Texas Mid-Continent Association, operators will cooperate with county collection chairmen in every area in which they operate. In their home counties, operators will see that their own scrap is collected and trucked to the nearest collection center. For other counties where they operate, they will be requested to sign and send out instructions (prepared by the association) to their field superintendents and farm bosses to collect and move the scrap there. Thus the operators own men will handle this, making it unnecessary for scrap buyers to go on the leases. County collection chairmen will be asked to arrange for use of a collection lot near trackside in each collection center and to furnish information to operators and field superintendents. Where operators have no facilities to weigh their scrap, or where there are no local scrap buyers, public weighers will be used. Payment to operators will then be based on official weight tickets and prices paid will be latest ones set by the Office of Price Administrator.

County chairmen and state committeemen are being urged by Roeser to see that the scrap is collected on time and then moved out as soon as possible to mills now needing it.

Bonus for Scrap

TO MAKE the release of oil field scrap more attractive to the industry, and also to build up a feeling that such activity will be of direct value in aiding maintenance of company properties, it has been suggested that some credit plan be worked out whereby a company would have added to its probable steel allocation some percentage of the scrap tonnage it disposes of. This would make available, in some measure, adequate replacement material for insuring uninterrupted production or operation.

Were such incentive added to the intangible urge of patriotic duty, many oil firms would be encouraged to utilize stand-by time of maintenance gangs in scouring leases for scrap materials. That vast quantities of such material lie scattered about on leases is evidenced by the collection of 2700 pounds of pipe, fittings, and other broken equipment (in addition to much still usable machinery) by a boy's organization on one 80-acre lease.

Scrap AND SALVAGE Scraps

• • • Published scrap prices are delivered prices. They include all handling and transportation costs from point of collection. They run, as a rule, about twice the value of collected scrap on the lease or delivered to community collectors.

• • • Scrap dealers are prepared to sort, but not to clean, junk. Old pipe, for example, can not be handled if packed full of B.S., paraffin, or dirt. If torch-cut into eight-foot or shorter lengths, much old pipe, particularly in threaded stock, is found to have sufficient wall thickness to justify reclaiming all but the end sections—which, knocked free of adhering dirt, are still desirable as scrap salvage.

• • • Drill collars, unless known or shown to be cracked or stressed beyond recovery by severe bending or whipping stresses, are probably worth more to the industry as raw material from which may be turned tool joints or wear subs than as possible scrap from which to make new steel. The steel industry, in turn, will profit from the machine-shop scrap resulting as by-product as the collar steel is turned to the desired diameter of the new material being made from it.

It is obvious, of course, that joints or subs made from old collar stock require thorough normalizing and proper heat-treating before being placed in service in a drilling string.

• • • Many junk dealers prefer to buy unclassified scrap, profiting by securing higher valued material at the low rate paid for miscellaneous materials. Segregation of cast and wrought iron from steel—unless a large amount of wrought pipe, for example, is being sold—brings no increase in cash returns, but the separation of bearing metals, brass and tool steel—such as tong and wrench jaws—pays high dividends on the time expended.

• • • A saving in tong inserts, of high-priced tool steel, is reported by one operator who heats the worn die and upsets it slightly, grinding it to fit, and in so doing renewing the vital gripping edge. Shortening of the material is negligible if the upsetting is carefully done.

• • • Wire line which is past further active service should be scrapped as soon as possible. Due to the relatively great amount of metal service exposed per pound of line, rust can soon eat away all the scrap value residual in the wire.

• • • While as a rule material normally cylindrical is more easily handled when flattened, scrap dealers prefer that non-reclaimable valves, pipe fittings and similar material be sold them in the original shape and condition. Cause of discard is then evident, and there can be no suspicion of possible damaging to deface private marks or to dispose of "hot" material—cause of frequent difficulty when oil-field theft rings flourished and disposal was in the hands of persons lacking oil company authority to act.

• • • Scrap dealers prefer wire line in longer lengths, as it is more easily cleaned and handled in this shape than when cut to "cord wood" lengths, as is the practice among some drilling contractors to insure against the line finding its way again into service.

• • • Handling of worn-out oil drums is greatly facilitated by cutting off both heads and flattening the resulting cylinder. Any torch operation, even on a drum with rust holes clear through the metal, should be performed with caution and clear vents assured.

• • • Requisitioning of auto graveyards by authorities of the Iron and Steel branch of the Bureau of Industrial Conservation in instances where owners fail to accede to requests for moving obsolete and non-reclaimable materials into scrap utilization channels, on a 24-hour notice basis, indicates how extreme is the urge for steel today in pace with augmented steel manufacture.

Steel scrap obtained from auto graveyards must be supplemented by scrap from other sources in order to keep within working limits the percentages of alloys introduced into the melt, as most auto steel is of high-alloy analysis. Oil field equipment, such as old pumping units, casing, tubing, drill pipe and derricks, offers desirable low-alloy material for mixing with the specialized auto scrap.

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THE WEEK'S NEWS

California Committee Adopts New Allocation Plan

The Conservation Committee of California Oil Producers February 2 approved a new method of allocating production submitted by the allocation subcommittee pursuant to instructions of the committee late last month.

The new method, which sets up preliminary quotas subject to modification caused by special conditions such as requirement for particular types of oil, disruption of transportation, or other war-caused factors, is based upon the determination of a calculated minimum rate of production, compared with the maximum efficient rate of production previously determined, the difference in the two figures then being modified by the application of a power factor and a percentage figure to arrive at the preliminary quota.

The method of allocation also makes a determination of pools and fields exempt from curtailment. Exempt fields are those whose preliminary primary quota as calculated is within 10 percent of the maximum efficient rate of production, except that in such fields no well will have an allotment of more than 75 barrels per day. This latter qualification, which applies to wells in exempt fields only, is intended to prevent too high levels of production from the occasional exceptional well in a pool whose average production from all wells is in the lower brackets. It is estimated that under this method, 86 pools in the state will be exempt from restrictions on production, unless such restrictions are made necessary by war factors.

One effect of the new method, if it is approved by the Petroleum Coordinator, will be to increase the allotment to producers of heavy oil, since the minimum allotment is based upon the two factors of depth and gravity of oil produced, and as the wells go down in the gravity scale, the allotment tends to be increased.

Expect Illinois to Exceed Quota After March

Unless new state legislation is enacted or the federal government intervenes with additional rulings, Illinois is expected to exceed its oil production quota after March, and possibly earlier, G. C. Curtis, superintendent of state oil and gas conservation, announced February 3.

Since an OPC quota was established in the state in January development work on all new wells in principal basin fields has declined from 70 to 80 percent. Bad weather and existing confusion over regulations, Curtis said, will hold down production for possibly the first three months of the year.

Production is expected to increase, he said, with the coming of more clement weather, and with the ruling of 1 well in 40-acre tracts clarified to mean that tests should be drilled in the center of such tracts.

Despite current "uncertainty," Curtis said wildcatting will continue "at almost the normal level" this spring. The state division at present is legally powerless to curb production. Crude oil buyers have been asked not to purchase amounts exceeding established quotas, but such a request cannot be enforced.

Approximately 2500 exceptions have been filed with OPC officials by Illinois oil operators since the M-68 order was issued December 23, 1941, officials said, but none have been acted upon.

Plan Rules for Secondary Recovery Operation in Illinois

Regulations governing secondary recovery of oil by water flooding methods in Illinois oil fields will be published February 10, Robert Jean, assistant superintendent of the state oil and gas conservation division, announced February 3 following a conference with operators in Springfield.

A list of suggested rules was discussed at the session after oil men sought to reopen the Westville pool in Clark County by utilizing water recovery methods. The pool was opened more than 30 years ago.

Jean said division geologists believe "extremely good production results can be obtained if such methods are employed in intelligent and uniform fashion." He pointed out that operators may be permitted to drill 16 wells in each 40-acre tract whenever such secondary recovery methods are used.

The first of a series of water wells will be drilled within the next two weeks in C SW 11n-14w, in the Clark County field, he said.

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Michigan Space Plan Looks to Future Drilling

New allowables representing reductions from 25 to 100 barrels per well daily in flowing fields were authorized by P. J. Hoffmaster, state supervisor, who at the same time announced that an appeal would be made to OPC for higher allowables in March.

"The federal recommendation of 47,000 barrels daily in Michigan is about 5,000 barrels daily below the firm demand and maintaining of the federal quota cannot help but create shortages for some independent refineries," he asserted. He expressed the opinion that no acute shortage would develop in February, however.

The new schedule reduces Roscommon from 250 to 150, Reed City from 175 to 150 and Winterfield from 200 to 150. The new allowables apply from February 1 to 14 with the three fields further reduced to a flat 125 per well on February 15.

Three spacing programs approved by the state further showed the earlier expressed belief that a swing to 40-acre spacing in Michigan will be on a deferred program of 20-acre unit drilling. Spacing plans now have been approved for Lincoln-Clare, Akron-Tuscola, Kawkawlin-Bay and Headquarters-Roscommon. Each is on the basis of 20-acre units but with alternating units to be left blank for the duration. Thus only one well will be drilled to each 40-acre unit but the way will be left open for drilling up on a 20-acre pattern after the emergency.

Gulf Tanker Shipments Up Slightly in December

Water shipments from Texas and Louisiana again increased slightly in December, totaling 42,649,957 barrels as compared with 42,639,574 barrels in November, it is shown by the monthly report of the Petroleum Conservation Division.

With Louisiana shipments recovering from the setback of the previous month to total 8,720,892 barrels against 8,242,697 barrels, the Texas movement showed a decline, from 34,396,877 barrels in November to 33,929,065 barrels in the final month of 1941.

A break-down of Texas tanker shipments showed a total of 30,201,692 barrels moving to Atlantic Coast ports against 30,542,510 barrels in November; 261,378 barrels to Gulf Coast ports against 447,070 barrels; 511,145 barrels to Atlantic-foreign ports against 514,180 barrels; 94,463 barrels (all gasoline) to Gulf-foreign ports against 62,829 barrels; and 60,758 barrels to U. S. Territories against 184,592 barrels.

The movement to Atlantic Coast ports, the division found, included 9,558,415 barrels of crude, 5,727,743 barrels of fuel oil, 3,928,158 barrels of gas oil, 8,665,954 barrels of gasoline, 396,214 barrels of lubricating oil, 1,876,442 barrels of kerosine and 48,766 barrels of miscellaneous products; shipments to Gulf ports included 194,067 barrels of fuel oil, 40,815 barrels of gasoline, 1438

OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

barrels of lubricating oil and 25,058 barrels of kerosine.

Shipments to Atlantic foreign ports consisted of 228,115 barrels of crude, 72,562 barrels of fuel oil, 71,965 barrels of gas oil, 88,117 barrels of gasoline, 14,496 barrels of lubricating oil and 35,890 barrels of kerosine, and shipments to territories included 45,009 barrels of gasoline, 8411 barrels of kerosine and 7338 barrels of miscellaneous products.

Barge shipments from Texas consisted of 488,551 barrels to Atlantic ports against 626,001 barrels in November; 2,160,545 barrels to Gulf Coast ports against 1,692,650 barrels, and 150,533 barrels to Mississippi River ports against 327,045. Atlantic Coast shipments consisted of 4457 barrels of fuel oil, 70,708 barrels of gas oil, 341,050 barrels of gasoline and 72,336 barrels of kerosine; to Gulf ports, 122,947 barrels of crude, 74,855 barrels of fuel oil, 34,659 barrels of gas oil, 1,812,170 barrels of gasoline, 7851 barrels of lubricating oil and 108,063 barrels of kerosine, and to Mississippi River points, 4342 barrels of gas oil, 144,049 barrels of gasoline and 2142 barrels of kerosine.

Louisiana tanker shipments included 3,157,252 barrels to Atlantic Coast ports against 2,881,033 barrels in the preceding month, and 797,117 barrels to Gulf Coast ports against 873,103 barrels.

The Atlantic Coast movement from Louisiana consisted of 1,918,786 barrels of crude, 422,340 barrels of fuel oil, 327,360 barrels of gas oil, 114,999 barrels of gasoline, 64,597 barrels of lubricating oil, 265,085 barrels of kerosine and 44,085 barrels of miscellaneous products. With the exception of 32,826 barrels of gasoline, the whole movement to Gulf Coast ports was crude.

Barge shipments from Louisiana included 236,949 barrels to Atlantic Coast ports against 294,024 barrels in November; 3,202,656 barrels to Gulf ports against 3,196,947 barrels, and 1,326,918 barrels of Mississippi River ports against 997,590 barrels. This movement consisted of 2127 barrels of fuel oil, 58,372 barrels of gas oil, 136,770 barrels of gasoline, 20,738 barrels of kerosine and 18,942 barrels of miscellaneous products to the Atlantic Coast; 2,997,996 barrels of crude, 32,553 barrels of gas oil, 151,739 barrels of gasoline, 13,597 barrels of kerosine and 6771 barrels of miscellaneous products to Gulf ports; and 115,222 barrels of fuel oil, 57,096 barrels of gas oil, 1,034,680 barrels of gasoline, 3954 barrels of lubricating oil, and 115,966 barrels of kerosine to Mississippi River points.

Magnolia Putting Booster On West Texas Line

Magnolia Pipe Line Company is erecting an additional booster station on its 8-inch carrier that connects upper basin fields with its West Texas terminal and tank farm at Midland to increase the capacity from 20,000 to 24,000 barrels daily. The site is near Andrews, and will use equipment salvaged from less active points on the company's system. The company's current runs from the north basin exceed line outlet due to its effort to relieve the unconnected well situation.

Magnolia Petroleum Company is erecting its third 80,000-barrel tank in the Abell field, Pecos County, where it has a field-wide gathering system. Company is rehabilitating its large Midland tank farm, installing new roofs and bottoms on 7 80's.

World-Wide Developments

New Decision Raises Hopes in Mexican Muddle

Oil companies whose properties in Mexico were expropriated in 1938 are much interested in a decision of the Mexican supreme court upholding the contention of Sabino Gordo Oil Company (Cities Service) that subsoil rights in concessions granted before the 1917 Mexican constitution could not be annulled by executive decree. Company officials in New York, declaring they had not examined the details of the decision, are noncommittal, but an undercurrent of optimism exists. Two officials used the same expression in declaring that the decision "may be far reaching."

No specific statement could be obtained from Standard Oil Company (New Jersey) except that the decision was being studied for the bearing it might have on the current work of American and Mexican appraisers to set a figure to be paid American oil companies. It was learned, however, that a company official in Mexico City was optimistic over the decree. An official in New York declared that as far as he knew, Morris Cooke, the American appraiser, had not yet been in consultation with the company, although Cooke recently returned to Washington.

Following the decision, a dispatch from Mexico City last week declared the chief representatives of the British and American oil companies were returning to New York for consultations. Company lawyers in Mexico City were reported on the whole as considering that the Sabino Gordo decision, although not an expropriation case similar to the others, has undermined the Mexican government that subsoil rights could be set aside by executive decree.

Reported views of Mexican officials on the decision are conflicting. Supreme Court Justice Ramirez is quoted as saying the court had reversed in principle the findings of previous decisions on expropriation of the foreign companies and had in effect upheld the companies' contention that they were entitled to payment for subsoil rights. Subsequently, a government press release asserted that "a member of the supreme court" had said the ruling was not of major importance in the expropriation issue. When asked to identify the member the government bureau designated him as Justice Ramirez. Minister of National Economy Gaxiola issued a statement that the decision had no relevancy to the expropriation issue. This view among Mexican officials is attributed to uncertainty as to where the Camacho administration stands.

The apparent reversal of Justice Ramirez's view actually occurred, said an oil company official in New York who is familiar with the new Mexican development. Ramirez wrote the opinion which the five-member section of the court adopted unanimously. This same company representative was emphatic in asserting lawyers in Mexico City are virtually unanimous in considering the decision paves the way for a reconsideration of the Mexican government's stand on the expropriation issue.

The supreme court held, according to the few details available, that an executive decree could not legally take away subsoil rights of Sabino Gordo Oil Company, which held a 72,000-hectare tract north of Tampico, under a concession granted prior to 1917. Oil company lawyers in Mexico City are reported as generally considering that the decision is closely applicable to the expropriated companies, most of whose properties were acquired before 1917, and that the decision substantially reverses a supreme court view of 1938 that the constitution of 1917 had a retroactive effect. The constitution declared the government to be owner of the subsoil, but also specified that such ownership did not apply to private ownership of lands acquired before 1917.

In 1921 the Mexican supreme court held the new constitution meant what it said. The Morrow-Calles agreement of 1927 definitely settled the status of the oil companies by recognizing that the constitution did not apply to rights obtained before 1917, and following that agreement substantial new oil investments were made. Following expropriation in March, 1938, however, the Cardenas administration, supported by the supreme court, consistently maintained during negotiations that the companies did not have the subsoil rights they claimed.

It is possible the Sabino Gordo decision will have some influence on the work of the American and Mexican appraisers in reaching an agreement on compensation to be paid the American companies. Compensation for subsoil rights was not expressly ruled out in the agreement announced last November. It is pointed out that much depends on the attitude of the Mexican administration toward the decision. Officials last week refused to comment on the possibility that the oil companies might prefer to reopen the controversy in the Mexican court rather than to abide by any agreement reached by Mexico and the United States. The companies are not bound, however, to accept any decision of the government appraisers.

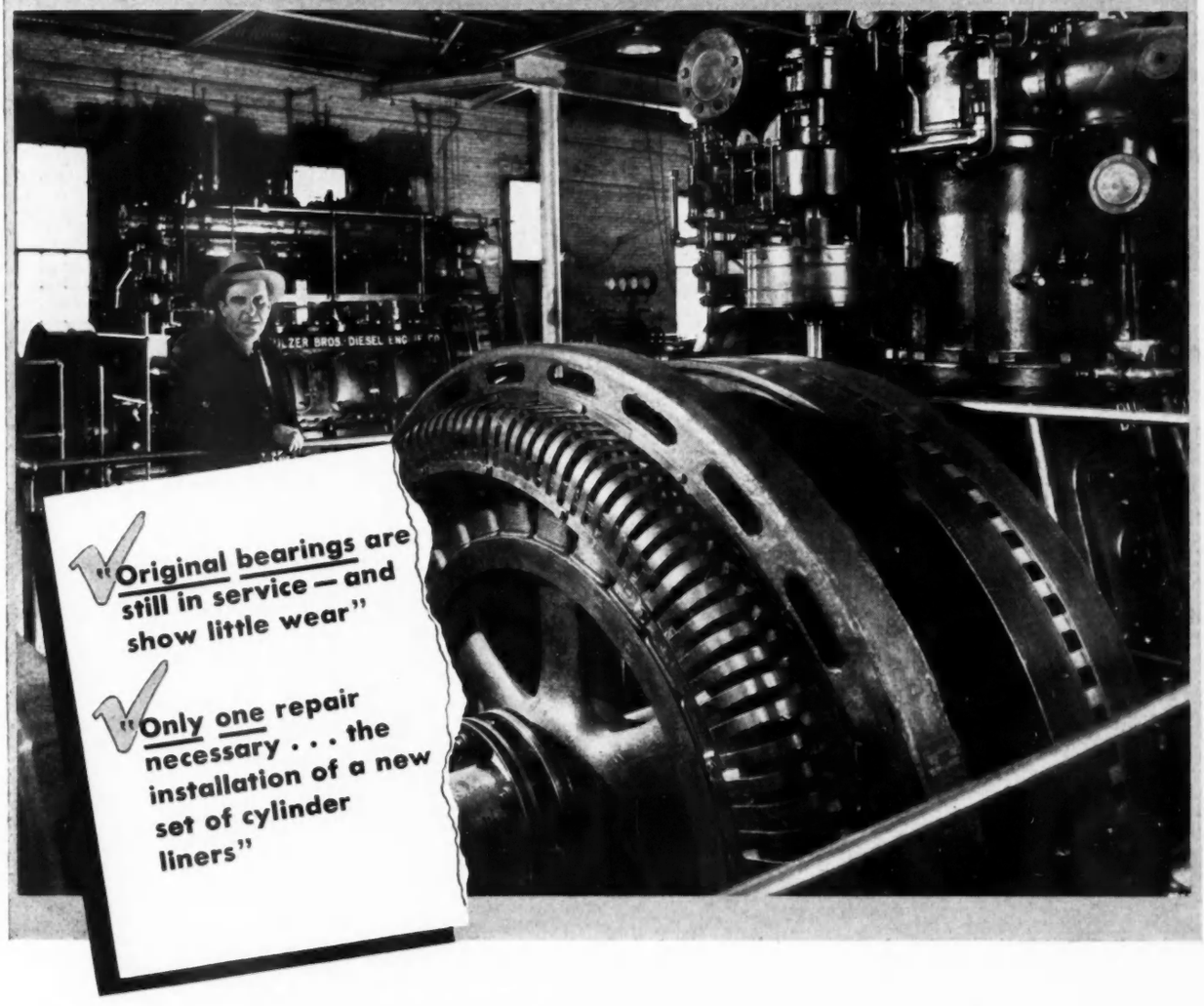
Standard Accepts Bolivian Expropriation Settlement

"The most practicable settlement under existing circumstances" is the way Standard Oil Company (New Jersey) officials characterize the deal negotiated early this month whereby its subsidiary, Standard Oil Company of Bolivia, accepted $1,500,000 from the Bolivian government in payment for properties expropriated in March, 1937. Bolivia drops all claims and charges against the company and the company releases Bolivia from all claims growing out of the seizure.

The settlement was negotiated by United States and Bolivian government representatives during the recent Inter-American conference at Rio de Janeiro and ratified by Standard Oil Company (New Jersey). Standard spokesmen last week readily admitted that $1,500,000 did not represent the full value of the producing and refining properties, which

"With Gulf Parvis Oils we've set a 20 YEAR maintenance record that's hard to beat"

. . . Says this Diesel power plant Superintendent


"Original bearings are still in service — and show little wear"
"Only one repair necessary . . . the installation of a new set of cylinder liners"

"ONE liner change, no other repairs in *20 years* of 16-hour a-day service—that's the hard-to-beat maintenance record we've set with Gulf Parvis Oils," says the superintendent of the municipal Diesel power plant, city of Opelousas, Louisiana. "Along with the savings in maintenance costs, we've secured highly efficient Diesel performance by using these quality lubricating oils."

There are good reasons for a record like this with Gulf Parvis Oils in service: These oils are scientifically manufactured to provide efficient lubrication for Diesel engines. They retain their lubricating value for long periods of time even under severe operating conditions, provide positive protection at a low consumption rate, and contribute to full compression and maximum kilowatt hour performance!

Perhaps savings in maintenance costs and improved operating efficiency can be obtained in *your* Diesel plant. Investigate — ask a Gulf engineer to recommend the right grade of Gulf Parvis Oil to fit your requirements. The results will show up in your records. Gulf Parvis Oils—and the 400 other quality lubricants in the Gulf line—are quickly available to you from more than 1200 warehouses in 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today.

GULF INDUSTRIAL LUBRICATION

GULF OIL CORPORATION · GULF REFINING COMPANY · GULF BUILDING, PITTSBURGH, PA.

are centered in the Camiri and Sanandita fields of Bolivia. Early last year the company declared that about $17,000,000 had been invested in the properties on a concession granted in 1922 and due to expire in 1979. The prevailing view of the settlement is that the amount of compensation is about the best that could be expected in view of the Bolivian government's adamant insistence on the justice of the expropriation.

It was learned last week that Standard Oil Company (New Jersey) has no present intentions to undertake further work in Bolivia. Up to 1936 the subsidiary company had steadily developed production there, though not in large quantities. In 1935 the company had a peak production of 164,000 barrels. In 1938, the first year of operation of the fields by the Bolivian government, production rose to 226,000 barrels, but dropped to 215,000 the next year and was only 110,000 barrels in 1940. Need of drilling equipment and replacement machinery has been one of the worst difficulties of government operation, a handicap that is to be lightened if, as reported, Bolivia is to get a $5,000,000 loan from the United States. Last month an American oil man left New York to go to Bolivia as an adviser in reorganization of the government oil monopoly.

In 1920, Standard Oil Company (New Jersey) and the Richmond Levering Company entered Bolivia. The latter organization in that year obtained from the government an exploration and exploitation concession of about 1,000,000 hectares. In 1921, Standard bought the Levering rights subject to approval of the transfer by Bolivia, and in March, 1920, the transfer was approved with modifications. The agreement was formally signed in July, 1922. In the final terms the government was empowered to rescind the concession and seize the properties "upon any defrauding of the fiscal interest." In March, 1937, the Toro regime, charging the fraudulent movement of several thousand barrels of oil, and willful failure to pay certain taxes, expropriated the holdings. Subsequently, the company went into court and presented proofs against the charges and sought to establish the illegality of the seizure, but without success.

Argentine Increased Oil Output During 1941

Government figures show oil production in Argentina last year totaled 22,015,138 barrels, an increase of 6.8 percent over 20,610,720 barrels in 1940. Government oil output last year was 13,588,585 barrels and production by private companies was 8,007,505 barrels.

Almost all the oil came from Comodoro Rivadavia, Mendoza, Plaza Huincul and Salta, which yielded, respectively, 15,718,000, 3,344,470, 1,071,318 and 1,880,015 barrels. Greatest expansion was in Mendoza, which produced 33 percent more than in 1940.

Argentina's natural gas reserves are little used, although the country in 1940 produced 16 billion cubic feet. Practically no gas is used for industrial purposes except that consumed in the oil fields. Gas used in Buenos Aires is either manufactured gas or bottled propane and butane produced in the refining industry.

Washington Roundup

[*Continued from page 14*]

equipment which is to be used in fabricating parts to fill the order. If producers who have been assigned a PD-1A rating need machinery or capital equipment for this purpose which they cannot obtain without priority assistance, they must apply for a separate rating on another PD-1A form.

In using the new form to replace materials in inventory, if the materials to be replaced are in whole or in part manufactured, processed, assembled or otherwise physically changed by the supplier, the rating must be extended while the materials are in process of fabrication. For materials which are not processed or otherwise changed by the supplier, extension of the rating may be deferred up to three months, until an order can be placed for the minimum quantity procurable on customary terms. This provision is primarily for the benefit of wholesalers and distributors, enabling them to group their own orders while making deliveries in small quantities.

The new regulations also allow a supplier or sub-supplier who has received two or more purchase orders bearing ratings of the same grade to include in a single or "basket" purchase order any or all of the material which he requires to make deliveries in accordance with the rated purchase orders which have been served upon him.

Council Meeting

Revision of Conservation Order M-68 and Preference Rating Order P-98, and the failure of the Office of Price Administration to raise crude prices in its price-fixing order on petroleum were major subjects of discussion at the February meeting of the Industry Council, the name of which was changed to Petroleum Industry War Council in recognition of the fact that matters of war rather than of defense will hereafter assume major proportions.

The council set up several additional committees, the most important being a standing committee on protection of petroleum facilities to work with the Army and Navy, the Federal Bureau of Investigation and other agencies in safeguarding the facilities of all branches of the industry against sabotage, espionage and enemy attack.

The council adopted a report from a committee to study a program of conservation and also a slogan—"Oil is ammunition; use it wisely"—which it plans to advertise to the general public.

Members of the council and the OPC staff, it is understood, engaged in forthright discussion of some of the problems of the industry, council members being particularly displeased with the countersignature requirements of P-98, which, they were told, was equally displeasing to the coordinator's office.

Tulsa OPC

Without any luck in securing action on its proposed revision of Preference Rating Order P-98 to eliminate the countersignature requirement, the OPC last week ordered E. E. Robbins, director of materials in the Chicago headquarters of District No. 2, to go to Tulsa with one or two assistants, primarily for the purpose of countersigning purchase orders for the operators but also to give them such other assistance as might be possible in getting supplies of necessary materials.

Robbins will countersign orders for operators in Kansas and Oklahoma and his assignment led to speculation in Washington as to the eventual establishment of a fully-staffed office in that area, either as a branch of the Chicago office or as headquarters for a new district to be carved out of District No. 2.

Hot-Oil Law

The Connally bill, making permanent the Connally hot-oil act, was passed by the Senate February 3 without a dissenting vote and sent to the House for consideration.

There was no debate on the measure, with which the membership is thoroughly familiar. A similar bill was passed two years ago but was rejected by the House.

The only effect of the bill would be to make permanent the law prohibiting the interstate or foreign shipment of oil produced in violation of state conservation law, now due to expire next June 30.

Storage Gasoline and Fuel Oil Used on East Coast

Latest weekly statistics of the industry reflected about normal trends except for a contra-seasonal withdrawal of gasoline from storage on the East Coast and a large draft on heavy fuel oil stocks in that district, apparently in reflection of the resumption of tanker transportation difficulties, occasioned by recent sinkings of American oil ships off the Atlantic Coast.

Refinery operations were cut back for the week, and the reduction permitted a further addition of crude oil to storage.

In averaging 3,848,000 barrels daily during the week ended January 31, crude runs to stills in the United States were off 37,000 barrels from the previous week's rate, with the reduction accounted for about 50-50 by the Texas Gulf Coast and California, while small increases and decreases in other districts offset each other. East Coast plants were stepped up from 603,000 to 618,000 barrels daily, the latter figure representing 87 percent of capacity. Plants in the Middle West also increased throughput. The week's rate of plant throughput was 188,000 barrels daily (5 percent) above that for the like week last year.

Stocks of finished and unfinished gasoline in the United States were increased about 1½ millions of barrels to 97,810,000 in the week of January 31, and the latter quantity was 7½ millions (8 percent) above the amount held a year previously. However, there was on the East Coast a contra-seasonal withdrawal from storage in the amount of nearly 300,000 barrels, while the Appalachian district also showed a decrease, as did one other area, the Oklahoma-Kansas district. California added nearly 200,000 barrels.

The national reduction in stocks of gas oil and distillate fuel was about 1,200,000 barrels, a normal change for the season. The East Coast accounted for 800,000 barrels of that decrease, and most other districts also showed withdrawals, although California was virtually unchanged. The national inventory is 2,736,000 barrels (7 percent) greater than that on hand a year ago.

Residual fuel oil stocks in the country were reduced approximately 900,000 barrels in the week ended January 31, having dropped to 91,189,000 barrels. That amount was 7 millions of barrels (7 percent) under the total reported a year earlier. The week's decrease was accounted for almost wholly by the East Coast, where a withdrawal of 800,000 barrels occurred. California took out of storage 200,000 barrels, and there

[*Continued on page 58*]

Crude Output Near All-Time Peak as Texas Skyrockets

United States crude oil production shot upward in the week ended February 7 and approximately duplicated the all-time high of late November, 1941, in averaging 4,335,200 barrels daily. The new rate was 461,600 barrels above that in the previous week, in reflection of the shutdown system of proration in Texas, which resulted in only 1 day of shutdowns for the week against 3 in the previous week. The national production temporarily was about 225,000 barrels above daily average demand for domestic crude, as estimated for February by the Bureau of Mines.

New all-time peaks were reached in the February 7 week by Texas and Mississippi.

Texas Above Demand

Texas averaged 1,732,650 barrels daily, compared with 1,274,600 in the previous week, and for the new period was nearly 200,000 barrels above demand. Mississippi climbed to 83,000 daily from 79,950 the week before in setting a new record.

California showed a small increase, as did Michigan. Oklahoma, Arkansas, and New Mexico were practically unchanged. Illinois, Louisiana and Kansas registered small declines.

United States Crude Oil Production Close to All-Time Peak

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Recommendation of Coordinator for February	State Allowable (Barrels Daily in February)	BARRELS DAILY FOR WEEK ENDED Jan. 31	Feb. 7
TEXAS:				
Texas Gulf Coast			251,300	344,550
East Texas			290,800	439,250
East Central Texas			80,500	96,050
South Texas			187,100	254,900
West Texas			243,400	353,850
North Texas			145,200	147,950
Panhandle			75,300	96,100
Total Texas	1,596,000	[1]1,543,739	1,273,600	1,732,650
CALIFORNIA:				
Long Beach			36,500	38,200
Midway-Sunset			43,500	54,700
Kettleman Hills			37,000	35,100
Wilmington			80,400	84,200
Others			439,000	428,500
Total California	632,300	[2]632,300	636,400	640,700
OKLAHOMA:				
Oklahoma City			73,300	83,450
Seminole Area			109,700	105,550
Others			225,850	219,200
Total Oklahoma	395,300	395,300	408,850	408,200
ILLINOIS:				
Salem			58,650	58,500
Louden			56,500	56,000
Centralia			7,750	7,700
Other New Pools			241,450	236,700
Old Pools			12,400	12,250
Total Illinois	371,800	368,950	376,750	371,150

DISTRICT OR STATE	Recommendation of Coordinator for February	State Allowable (Barrels Daily in February)	BARRELS DAILY FOR WEEK ENDED Jan. 31	Feb. 7
LOUISIANA:				
North Louisiana			82,800	81,150
South Louisiana			285,500	284,200
Total Louisiana	335,000	344,955	368,300	365,350
KANSAS	251,700	251,700	251,200	246,700
NEW MEXICO	119,300	119,300	120,200	121,400
EASTERN STATES:				
Pennsylvania Grade	72,700		77,000	79,500
Others, Eastern	21,500		18,500	18,500
Total Eastern States	94,200		95,500	98,000
MOUNTAIN STATES:				
Wyoming	78,000		90,900	88,500
Montana	20,400		20,900	20,850
Colorado	6,500		6,400	6,500
Total Mountain States	104,900		118,200	115,850
MICHIGAN	47,000	47,000	49,000	51,750
INDIANA	17,200		16,400	20,800
ARKANSAS	74,500	74,500	74,100	74,400
MISSISSIPPI	57,400		79,950	83,000
NEBRASKA	5,200		5,150	5,250
[3]Total 8 Prorated States	3,451,100	3,408,794	3,181,650	3,641,150
Total United States	4,101,800		3,873,600	4,335,200

[1] Calculated daily average of actual production at beginning of month, allowing for underproduction of 3½ percent below net allowable, which was figured at 1,606,389 barrels daily as of February 1. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated for February 1. Under February order, most Texas fields were ordered shut down February 4, 8, 14, 15, 21, 22, and 28.

[2] The District 5 Production Committee has named a Conservation Committee to distribute the California February quota of 632,300 barrels, as assigned by Petroleum Coordinator Ickes.

[3] Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

[*Continued from page 57*]

were small withdrawals in the Oklahoma-Kansas, Inland Texas, Coastal Louisiana, North Louisiana-Arkansas, and Rocky Mountain districts; but small increases occurred in the Middle West, the Texas Gulf Coast, and the Applachian district. Much of the decrease as compared with a year ago is accounted for by California.

Crude oil stocks in the United States were increased in the week ended January 24 from 246,267,000 to 247,764,000 barrels, and the latter quantity was about 13½ millions of barrels (5 percent) under the total for a year previously.

SKELLY OIL COMPANY held a recent conference of geologists in the Tulsa office. Executives and department heads in related work conferred with the field men on the current picture. Geologists called into Tulsa were James Fitzgerald, Midland; Joe Neiddig, Great Bend; W. W. Simpson, Evansville; R. R. Ransom, Falls City, Nebraska; E. R. Mosby, Houston; John Scott, Shreveport, and A. J. O'Rourke, Wichita.

Tanker Scarcity Affects Oil Suppliers and Producers

Markets last week were featured by firm demand for all products on the Atlantic Coast, in reflection of increasing scarcity of supplies in the open market.

The tightness of supplies of all the major petroleum products in the East is attributed to continued exceptionally cold weather, diversion of tanker capacity to the molasses trade, transfer of tankers to the Pacific, and slowing down of Gulf-Atlantic shipments by submarine attacks.

During each of the past four weeks there has been a diminution in stocks of fuel oil on the East Coast. Between January 10 and January 31, stocks of residual fuel oil were reduced from 11,053,000 to 8,789,000 barrels and those of gas oil and distillate fuel from 17,728,000 to 13,400,000 barrels, while gasoline storage came down from 19,863,000 to 19,536,000 barrels, despite 8 percent larger gasoline output of East Coast refineries. The current relatively large demand for gasoline is attributed to increased use by the military as well as to heavier traffic to war industry plants.

While the tanker situation is causing scarcity of supplies of oils in the East, it is bringing about also an accompanying backing up of crude oil in storage in some districts of the Southwest, including particularly West Texas and New Mexico, where application of pipe line proration consequently has been found necessary. Atlantic Refining Company, substantial purchaser in Pecos, Ward, Gaines, Yoakum, and Hockley counties, Texas, and in Lea County, New Mexico, has ordered curtailment of crude runs to 77½ percent of the daily allowables effective February 10. Other buyers indicated privately prior to the issuance of the February production quotas that pipe line proration would be inevitable unless drastic reductions were made in allowables. This relief was not given, although moderate cuts were made by New Mexico and Texas in their respective sectors of the basin. The volume of unconnected wells in the Slaughter field, which has been the most active drilling center for months, has assumed large proportions. Magnolia Pipe Line Company, which is the only carrier that makes outside connections, exceeded its capacity in January and is installing another station to boost its flow by 4000 barrels to 24,000 daily. Other lines that connect with trunks at Hobbs and Midland restrict their runs to controlled oil. Comparatively little empty space is available in the trunk lines that deliver Permian Basin crude to Gulf Coast and Mid-Western terminals and refineries.

A Navy report that the 7237-ton tanker Pan Maine of the Pan American Petroleum and Transport Company had been torpedoed off the Atlantic Coast on January 26 was declared erroneous last week by the Navy. A periscope had been sighted and an attack was anticipated, but the ship managed to escape.

However, the submarine campaign against tankers continued with the confirmed torpedoing on January 30 of the 6836-ton tanker Rochester, of Socony-Vacuum Oil Company, off the Atlantic Coast at an undisclosed point. Outcome of the torpedoing was not divulged. This was the seventh tanker to be attacked in the coastal area. Offsetting this loss was the launching on January 31 of the Maritime Commission's tanker Gettysburg in Sun Shipbuilding and Drydock Company at Chester, Pa.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
February 18	3,324,300	[6]3,125,000	271,252,000	83,075,000	23,747,000	111,349,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]4,030,800	3,475,000	246,982,000	73,475,000	37,722,000	[2]116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	[2]39,562,000	114,786,000
1940:						
January 6	3,584,450	[6]3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	[6]102,344,000
March 16	[2]3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,558,000
April 6	3,745,000	3,455,000	251,897,000	101,690,000	[6]23,551,000	105,099,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
September 14	3,647,400	3,580,000	262,475,000	83,300,000	46,648,000	[2]109,135,000
October 19	3,667,550	3,525,000	262,098,000	81,656,000	[2]49,051,000	108,141,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	[6]3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
1941:						
January 4	3,367,200	3,600,000	260,643,000	85,053,000	42,403,000	[2]102,448,000
January 11	[6]3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	[6]3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 29	3,746,550	3,625,000	[2]266,187,000	[2]99,727,000	29,949,000	96,152,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	[6]28,381,000	95,471,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 31	3,786,100	3,699,000	262,356,000	93,845,000	33,524,000	92,757,000
June 28	3,847,250	3,930,000	259,399,000	91,461,000	35,732,000	92,896,000
July 5	3,658,200	3,745,000	258,070,000	90,064,000	36,925,000	[6]92,635,000
July 26	3,869,950	3,920,000	252,728,000	86,945,000	40,197,000	93,855,000
August 30	4,004,700	4,070,000	249,413,000	81,672,000	45,351,000	95,052,000
September 27	4,060,000	3,980,000	246,649,000	81,003,000	49,950,000	95,251,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[4]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
October 25	4,098,800	4,060,000	242,261,000	83,343,000	53,183,000	95,295,000
November 15	4,086,850	4,010,000	[6]240,399,000	83,412,000	[2]54,983,000	95,993,000
November 22	[4]4,336,850	3,995,000	241,956,000	84,579,000	54,396,000	95,982,000
November 29	4,086,000	4,115,000	242,884,000	85,525,000	54,141,000	95,971,000
December 27	4,080,850	4,096,000	243,990,000	91,133,000	50,177,000	95,819,000
1942:						
January 3	4,038,000	3,961,000	244,440,000	92,987,000	49,357,000	95,857,000
January 10	4,229,150	3,891,000	244,364,000	94,204,000	47,250,000	94,885,000
January 17	4,045,600	3,723,000	246,267,000	95,617,000	43,984,000	92,703,000
January 24	4,311,300	3,885,000	247,764,000	96,363,000	41,863,000	92,079,000
January 31, 1942	3,871,350	3,848,000	.....	97,810,000	40,674,000	91,189,000
January 31, 1941	3,590,150	3,660,000	[4]261 208,000	90,366,000	37,938,000	98,097,000
Amount of change in past year	+281,200	+188,000	—13,444,000	+7,444,000	+2,736,000	—6,908,000
Percent change in past year	+7.8	+5.1	—5.1	+8.2	+7.2	—7.0

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, February 1, 1941.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.

Defense Project Gas Line Started in South Arkansas

Arkansas - Louisiana Gas Company last week announced that it, in conjunction with the Defense Plant Corporation, will lay a 139-mile electrically welded gas line from the sour gas fields in Columbia County, Arkansas, to Bauxite, Arkansas, and Lake Catherine, Arkansas, in Hot Springs County.

The gas to be transported will be used for a new alumina plant near Benton, Arkansas, and a new aluminum plant and power-generating plant between Hot Springs and Malvern, Arkansas, on Lake Catherine. Priorities have been granted the project and some material is already on the ground.

The line will have a daily capacity of 61 million cubic feet and will range in size from 12¾ to 18 inches. It is expected to be finished by September 1.

At the point of origin the Arkansas-Louisiana Gas Company will build a gasoline extraction and sulphur removal plant.

U. S. FIELD OPERATIONS

Illinois

Promising Oil Shows In Scattered Wildcats

Promising oil shows were found at two wildcats in White County; one in Edwards County; one in Franklin County; one in Perry; one in Jasper. Casing was set to a prospective extension of the Rural Hill field, Hamilton County.

White County: Minerva Oil Co.'s Ramsey 1, C N½ SW NE 33-6s-10e, 4½ miles southeast of Storms field, on drill stem at 2903-14 ft in Aux Vases, open 45 minutes, 1500 ft of fluid was recovered of which 1410 ft was oil, 90 ft of drilling mud also was recovered. Casing to be set.

Carter Oil Co.'s Marlin 1, SW NW 35-6s-9e, south of Storms field, to perforate opposite McClosky at 3003-07 and 3019-27; later will perforate Bethel at 2797-2810; two drill-stem tests in McClosky had oil shows. Elev 456; topped Lower Kincaid 1931, Menard 2173, Vienna 2299, Glen Dean 2433, Golonda 2492, St. Genevieve 2950 and St. Louis 3088 ft.

Carter's Edwards 1, NE NW SE 15-7s-8e, one location southwest production in Roland field, swabbed between two and three barrels of oil an hour and bailed some water after plug was drilled to 2190 ft in Waltersburg sand.

Wayne County: Bell Brothers Jones 1, C W½ NE SE 24-1n-5e, wildcat west of Johnsonville field, will test McClosky at 3107-11 ft.

COMPLETIONS

Clay County—Gulf's Reed 3, se ne se 26-4n-7e, McC 2975-85 ft, td 2996 ft, 16 bbls oil.

Clinton County—J. J. Broadus' Geary Hrs 2, nw ne sw 14-1n-1w, Beth 1431 ft, td 1441 ft, 40 bbls oil. Anderson et al's Seifert 1, sw se sw 28-3n-2w, td 1345 ft, abnd.

Edwards County—Helm & Payne's Reid 1, nwc 18-1s-11e, McC 3186-320s ft, td 3201 ft, 100 bbls oil. Bander & Martin's Wells 2, s½ sw ne 31-2n-14w, McC 3136 ft, td 3145 ft, 168 bbls oil. K. M. Menefee's McDowell 2, sw se se 31-1n-11e, Walts 2433-37½ ft, td 2437½ ft, 20 bbls oil.

Effingham County—Carter's Steele 2, sw nw sw 6-8n-4e, abnd 1525 ft.

Fayette County—Carter's Wood 3-D, c ne nw 11-8n-3e, Dev 3133 ft, td 3139 ft, 100 bbls oil. Vetsch & Thompson's Eagleton 1, se ne sw 20-8n-3e, Weil 1520 ft, td 1540 ft, 66 bbls oil. Carter's Dragoo 24-5, sec se ne 23-8n-3e, td 1548 ft, gas input.

Franklin County: Wildcat—Basin Drlg. et al's Ruhamel 1, ne nw sw 30-6s-2e, abnd 2836 ft.

Hamilton County—Pure's Cox 1, se ne se 12-6s-5e, Rosl 3155-65 ft, A. V. 3050-80 ft, td 3313 ft, 434 bbls oil. Shell's Crabtree "B" 4, se sw sw 13-6s-5e, A. V. 3110-48 ft, td 3370 ft, 490 bbls oil; Nohava 3, ne sw ne 13-6s-5e, A. V. 3122-36 ft, td 3341 ft, 83 bbls oil; Smith 4, ne se ne 13-6s-5e, L. O'H. 3237-45 ft, A. V. 3146-80 ft, McC 3316-28, 62-72 ft, td 3404 ft, 880 bbls oil. Shoenfelt et al's Hamilton 6, ne nw se 13-6s-5e, A. V. 3128 ft, td 3166 ft, 300 bbls oil. Gulf's Morlan B1, ne sw sw 14-6s-5e, L. O'H. 3163-67 ft, td 1383 ft, 18 bbls oil; Morlan B2, nw sw sw 14-6s-5e, abnd 3368 ft. Kewanee Oil's Culpepper 3, se sw se 14-6s-5e, L. O'H. 3164-79 ft, td 3369 ft, 1000 bbls oil. Superior's Darnell 1, ne ne ne 22-6s-5e, A. V. 3160-72 ft, td 3187 ft, 90 bbls oil; Darnell 2, nw ne ne 22-6s-5e, A. V. 3159-79 ft, td 3186 ft, 250 bbls oil. Shell's Crabtree B3, nw ne ne 23-6s-5e, A. V. 3077-99 ft, td 3351 ft, 375 bbls oil. Whisenant & Trenchard's Lockwood 8, se se ne 23-6s-5n, abnd 3174 ft, Texas' Johnson 12, se ne ne 13-6s-6e, A. V. 3090-3103 ft, td 3112 ft, 58 bbls oil.

Jasper County—Pure's Honey A2, e½ nw ne 17-5n-10e, Rosl 2770-78 ft, McC 2788-94 ft, td 2820 ft, 28 bbls oil. Beavers 3, e½ nw ne 18-5n-10e, McC 2838-43 ft, 53-56 ft, td 2865 ft, 173 bbls oil.

Jefferson County—Martin et al's Rosenberg 2, ne ne nw 35-2s-1e, Beth 2005 ft, td 2017 ft, 96 bbls oil. Shell's Burkhardt 6, sw nw ne 35-2s-1e, Beth 1990-2021 ft, td 2273 ft, 144 bbls oil. Skelly's Woodlawn 1, nw ne sw 1-3s-1e, Beth 1974 ft, td 1981 ft, 141 bbls oil. Yingling et al's Fouts 1, sw sw ne 20-1s-1e, td 2374 ft, abnd. Intra-State's Heaton 1, sw ne se 1-2s-1e, td 2071 ft, abnd.

Lawrence County—Sinclair-Wyoming's All States 5, s½ sw nw ne 22-2n-11w, Beth. 1742 ft, td 1774 ft, 47 bbls oil. Ky Nat. Gas' Prather 6, ne nw se 18-4n-10w, Buchanan 785 ft, td 805 ft, 1,900,000 gas.

Marion County—Texas Mazanek 1, c n½ nw sw 36-4n-2e, Beth 1930-40 ft, td 2142 ft, 15 bbls oil. Lagers & Webb's Clear 1, sw ne ne 28-4n-2e, abnd 1165 ft.

Wabash County—Hayes Drlg.'s Cotner 5, s½ ne nw 21-1s-12w, Cyp 1995-2009 ft, McC 2291-2302 ft, td 2318 ft, 125 bbls oil. Cotner 6, sw ne nw 21-1s-12w, Cyp 1990-2005 ft, td 2005 ft, 140 bbls oil.

Wayne County—Texas' Bullard 1, c s½ sw nw 23-1n-6e, McC 3194-97 ft, td 3200 ft, 16 bbls oil. Wiser's Matchett 2, c w½ se se 27-1n-6e, A. V. 2936-46 ft, td 2946 ft, 124 bbls oil. United Prod.'s Cariens 8, c w½ sw ne 34-1n-6e, A. V. 2968-2990 ft, td 2990 ft, 150 bbls oil. Schofield 3, c w½ se se 34-1n-6e, A. V. 3030 ft, td 3042 ft, 300 bbls oil. Shell's Cisne Bank B1, c e½ sw ne 36-1n-6e, A.V. 3078-88 ft. McC 3210-20 ft, L. O'H. 3196-3204 ft, td 3269 ft, 217 bbls oil. Wiser Oil's Schell 1, w½ se ne 36-1n-6e, McC 3192-95 ft, 3205-13 ft, 3242-50 ft, A. V. 3074-90 ft, 3093-96 ft, td 3256 ft, 125 bbls oil. Gulf's Shehorn B2, ne se nw 3-1s-6e, McC 3164-68 ft, td 3233 ft, 351 bbls oil. Texas' Fuhrer 2, c w½ sw se 28-1s-6e, A. V. 3010-26 ft, td 3185 ft, 30 bbls oil. H. H. Weinert's Morlan B5, se ne nw 33-2s-7e, McC 3300 ft, td 4140 ft, 40 bbls oil. Gulf's Solon 1, w½ se se 17-2s-6e, abnd 3380 ft. Globe Oil & Refg.'s Whitrow 1, n½ ne nw 21-1s-6e, abnd 3228 ft.

White County—Superior's Fitton 31, sw nw nw 23-4s-14w, Cyp 2652-64 ft, 2689-99 ft, td 2895 ft, 20 bbls oil; Fitton 36, nw ne sw 23-4s-14w, A. V. 2843-78 ft, td 2880 ft, 178 bbls oil. Sun's Greathouse 38, ne sw se 33-4s-14w, Beth 2690 ft, td 2714 ft, 110 bbls oil. Skelly's Bryant 2, n½ se sw 7-4s-10e, McC 3237 ft, td 3246 ft, 468 bbls oil. H. A. Brisch's Bolerjack 1-B, ne ne ne 23-6s-8e, Beth 2794-90 ft, td 3099 ft, 5 bbls oil. Yingling's Karch 4, ne se sw 13-6s-10e, Pales 2009-2020 ft, td 2914 ft, 118 bbls oil. Sinclair-Wyoming's Rainey 1, se ne se 2-7s-8e, Beth 2751-79 ft, td 2785 ft, 87 bbls oil. N. V. Duncan's Winfrey Comm 2, e½ nw ne ne 11-7s-8e, Beth 2742-69 ft, A. V. 2890-2927 ft, td 2927½ ft, 215 bbls oil. Stilley et al's Ramming 1, se se se 17-4s-9e, td 3440 ft, abnd.

OLD WELL DEEPENED

Marion County—Texas' Hopkins 7, nw ne se 31-2n-2e, Tren 4529-34 ft, td 4588 ft, 109 bbls oil; otd not knokn.

Indiana

New Gibson County Pool Producing From Mansfield

With an initial of 20 barrels of oil a day, Mo-Jo Oil Co.'s Revis Dugan 1, SE SE NW 35-2s-9w, Gibson County, was a pool-opener in the Mansfield sand at 1066-74 ft.

Southwest of production in the Hazleton field, Walter Miller's Ewing 1, SW Donation 78-1n-10w, was being put on pump, showing for a commercial well after 200 gallons of acid in McClosky at 1801-16 ft.

COMPLETIONS

Gibson County—Continetal's Maier 51, irreg sec 31-2s-13w, abnd 2911 ft. Lewis Petroleum's Cooper E-2, 19-3s-13w, irreg sec, Walters 2076-98 ft, td 2098 ft, 80 bbls oil.

Hancock County—Blue Riger Gas' Porter 1, n½ nw se 29-15n-8e, Trenton 879 ft, td 887 ft, 10,000 gas.

Pike County—Oleum Pet.'s 1st Natl Bank 7, s½ sw ne 5-2s-8w, Harden's 1193-1203 ft, td 1206 ft, 7 bbls oil.

Posey County—Lindas & Riddle's Seifert 2, sw ne nw 20-6s-12w, Mans. 1067½-110 ft, td 1100 ft, 150 bbls oil. Central States' Seifert 4-C, se nw nw 30-6s-12w, Mans. 1088 ft, td 1108 ft, 60 bbls oil. Carter & Gulf's Hart C-76 1, ne nw sw 1-7s-14w, Walts. 1993-2009 ft, Cyp. 2459-75 ft, td 2497 ft, 594 bbls oil; Erwin C-76 3, se sw ne 1-7s-14w, Walts. 2012-15 ft, td 2499 ft, 62 bbls oil. J. Lindas et al's Thomas 1, ne ne se 24-7s-13w, td 2375 ft, abnd.

Spencer County—R. E. Cope et al's Bretz Hrs. 4, ne ne se 34-6s-6w, abnd 1300 ft. Ken-Pen's Metz 1, ne nw sw 10-6s-7w, abnd 1567 ft.

Vanderburg County: Wildcat—J. J. Deaner's Bixler 1, se ne nw 21-4s-11w, abnd 2592 ft.

Kentucky

New McClosky Pool Indicated in Henderson

South of Reed, a new McClosky pool-opener is indicated at Chenault and Farmer's O. L. Chase 1, C SW SW

Summary of Drilling Operations in the United States, Week Ended February 7, 1942

	WELLS COMPLETED						
	Completions	Oil Wells	Gas Wells	Failures	†Miscellaneous	Total 1942	Total this Date 1941
Alabama	....	....	....	....	....	2	....
Arkansas	4	3	....	1	....	15	16
California	20	16	1	3	....	125	131
Georgia	....	....	....	....	....	1	....
Illinois	58	44	1	11	2	380	334
Indiana	12	6	1	5	....	49	54
Kansas	30	23	1	4	2	243	211
Kentucky	3	2	....	1	....	23	34
Louisiana	21	10	....	11	....	134	158
Michigan	14	10	1	3	....	96	83
Mississippi	1	....	....	1	....	28	17
Missouri	....	....	....	....	....	2	9
Montana	2	2	....	....	....	19	20
Nebraska	....	....	....	....	....	7	14
New Mexico	9	8	....	1	....	48	41
New York	31	19	....	....	12	161	67
Ohio	39	13	16	10	....	175	180
Oklahoma	32	14	3	11	4	240	224
Pennsylvania	47	....	7	....	40	324	367
Tennessee	....	....	....	....	....	1	3
Texas	164	112	1	44	7	1,080	943
West Virginia	25	3	16	3	3	88	91
Wyoming	1	1	....	....	....	8	11
Total this week	513	286	48	109	70	3,249	3,008
Total last week	530	330	52	126	22	2,736	2,473
Total this year	3,249	1,959	256	717	317	....	....

† Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

11-2-26, Henderson County, which was pumping 14 barrels of oil an hour after 1000 gallons of acid in McClosky pay at 1973-78 ft. Hole is bottomed at 1978 ft.

COMPLETIONS

Hancock County: Leeper Oil Co.'s Rowland 9, 3-O-33, Tar Spgs. 480-90 ft, td 498 ft, 8 bbls oil.

Logan County: Wildcat — Rex Pyramid's Gordon Hrs' 1, 4-D-30, abnd 1432 ft.

Union County: Basin Drlg. Co.'s Riley Comm. 1, 20-O-18, Mand. 1332-41 ft, 55-72 ft, td 1372 ft, 25 bbls oil.

Oklahoma

Payne County Well Shows; Wildcat Locations Up

Cimarron County wildcat fails; new wildcat locations in state flourish; new field looms for Payne County; apparent Lincoln County strike gets salt water.

Cimarron County: Gulf Oil Corp.'s Cox 1, C SE SE 35-2n-8ecm, between towns of Sempsel and Griggs, drilled to 6165 ft in Arbuckle lime topped at 5995 ft, ran electric survey, no shows, plugging.

Jefferson County: Carter Oil Co. et al's Robinson 1, C SW SW 9-4s-6w, north of Claypool, new wildcat location on seismograph structure.

Marshall County: Lloyd Noble et al's Neff 1, C NE SW 13-6s-6e, wildcat location west of Aylesworth.

Canadian County: Fred H. Butcher & Co.'s Abbott 1, C S½ NW 1-14n-5w, near Piedmont, Wilcox sand wildcat location.

Payne County: Oklahoma Gasoline Co.'s Minnich 1, NE SE NE 3-18n-6e, may open new field 3½ mi south of Yale, wildcat drilled to 3248 ft, filled two 210-bbl tanks, then shutin. Deep Rock Oil Corp. extending line to take oil. J. Gibson et al's King 1, C NW NE 6-7n-5e, semi-wildcat west of Cushing, cored stained sand at 1980-90 ft, drilling ahead below 2100 ft.

Lincoln County: W. K. Jones et al's Lockhart 1, SW NW SE 17-14n-4e, prospective Wilcox sand strike near Chandler, drilled to 5068 ft in sand topped at 5059 ft, drill stem test showed salt water, little oil.

COMPLETIONS

Caddo County: Apache — Amerada's To-Who 1, ne nw sw 2-5n-12w, Bromide 3464 ft, td 3761 ft, flow 2496 bbls oil, 2,164,000 gas, 320 lbs pressure.

Caddo County: Wildcat—Amerada's Sprague 1, c se nw 11-8n-12w, anhy 3585-3870 ft, Panhandle lime 3985-4249 ft, Pontotoc 5295 ft, Cisco 5500 ft, Coal 7774-77 ft, dry sand 3603-73 ft, sand show oil 9446 ft, cored 9446-51 ft, 2 ft dark grayish calc sand, stain & black oil in partings, sand 10,190-10,231 ft, pb 9460 ft, 56 gals fluid on 34-hour test, td 10,231 ft, abnd.

Comanche County: Lawton — Pat King's Frazier 2, sw nw se 29-2n-10w, abnd 330 ft.

Grady County: Chickasha—Phillips' Neal 1, c ne ne 21-5n-8w, sand 6017-41 ft, td 6055, pb 3967 ft, drill stem 3957-2841½ ft, fresh wtr, abnd.

Hughes County: Wewoka—Phillaine's City of Wetumka 1, se nw sw 13-9n-10e, Hunton 3750 ft, td 4000 ft, pb 3860 ft, shot 12 qts, 2000 gals acid, pump 85 bbls oil and 1550 bbls water.

Jackson County: Tipton—Kerbo & Britton's Leona 3, se sw se 31-1n-19w, granite wash 2561 ft, td 2660 ft, pump 10 bbls oil and 20 bbls water.

Jefferson County: Oscar — Long-Yingling-Locke's Seay 34, nw ne ne ne 3-7s-5w, sand 1240 ft, td 1246 ft, shot 30 qts, pump 42 bbls oil.

Lincoln County: Laffoon—Buell & Herndon's Gray 1, c nw sw 3-13n-6e, Hunton 4133 ft, td 4141 ft, 4000 gals acid, 7,200,000 gas, 760 lbs rock pressure.

Love County: Wildcat—Walter Neustadt's Wilkins 2, swc se se se 8-6s-2e, abnd 2306 ft.

Muskogee County: Council Hill—C. Tierney's Drew 5, se c sw ne 17-13n-16e, sand 2084-2141 ft, td 2141 ft, shot 80 qts, pump 18 bbls oil.

Muskogee County: Butler — Gulbertson's Thompson 2A, ne sw sw sw 3-14n-15e, Brooch 932-62 ft, abnd 975 ft.

Muskogee County: Link—R. V. Dillard's Morris 1A, sw c se nw 20-15n-15e, pay 1475-85 ft, td 1557 ft, perf, pb 1492 ft, pump 7 bbls oil.

Noble County: Wildcat—O. M. Mason et al's Wentz 1, c w½ nw ne 13-24n-3e, Neva 300 ft, Foracre 448 ft, Lecomp 1207 ft, Ccb 2935 ft, Big Lime 3118 ft, Osw 3180-3360 ft, Miss 3542 ft, cored 3858-68 ft, Simpson Dense 3877 ft, Dolo 3878 ft, white sand 3996-4040 ft, Misener sand 3925 ft, dolo 3930 ft, Wx 3940 ft, td 4151 ft, abnd.

Okfuskee County: Unnamed—Shell's Palmer 4, se nw sw 6-10n-9e, Cromwell 3358 ft, td 3378 ft, 13,600,000 gas, 590 lbs rock pressure, McBride's McMahon 2, nw se ne 15-11n-10e, Pitkin 3262 ft, td 3285 ft, abnd.

Okfuskee County: Wildcat — Olson Drlg. Co.'s Armstrong 1, ne ne ne 3-11n-10e, abnd 3355 ft.

Oklahoma County: Oklahoma City — Sunray's Jones-Harn 3, se se nw nw 27-12n-3w, Wilcox 6475 ft, td 6551 ft, pb 6546 ft, shot 140 qts, pump 253 bbls oil.

Pottawatomie County: W. Hotulke—Atlantic's Higbee 4, nw sw sw 22-9n-4e, Viola 4448 ft, td 4706 ft, perf, 4500 gals acid, pump 400 bbls oil.

Seminole County: Swasakwa — Magnolia's Spillman 3, ne ne se 12-6n-7e, 2nd Calvin 1195 ft, td 1210 ft, shot 30 qts, pump 15 bbls oil.

Seminole County: Dore — Shephard & Thomas' Ludy 2, se nw nw 34-7n-6e, Earlsboro 2754-68 ft, td 2850 ft, shot 80 qts, rec 3 bbls oil, abnd.

Seminole County: Wildcat—Domar Oil Co.'s Ashby 1, nw nw nw 32-8n-6e, Calvin 2640-55 ft, Lower Calvin 2670-2700 ft, Senora Lime 2825 ft, Pitkin lime 3035 ft, Earlsboro 3080 ft, Mayes 3995 ft, Wood 4100 ft, Hunton chert 4249 ft, Hunton lime 4250 ft, Sylvan 4257 ft, Viola 4315 ft, Dense 4355 ft, Dolo 4384 ft, 1st Wx 4420 ft, cored 4422-32 ft, Wilcox sand tight and no show, td 4559 ft, abnd.

Stephens County: Doyle—Sun's Hefner 2, nw se se 12-1n-5w, sand 5977-98 ft, td 6098 ft, shot 70 qts, flow 180 bbls oil.

Stephens County: Velma—Skelly's Frensley 3, nw sw nw 36-1s-5w, sand 1268-75 ft, td 1275 ft, 2,500,000 gas, 345 lbs shut in pressure; Nichols 14, nw sw se 36-1s-5w, sand 758-80 ft, sand 790-803 ft, td 803 ft, shot 10 qts, pump 132 bbls oil.

Stephens County: Empire—J. P. Ledford et al's Taleferro 1, c e½ sw 27-1s-8w, sand 2224-44 ft, td 2290 ft, perf, pump 160 bbls oil. Palmer & Palmer's Eaks 1, sw se ne sw 32-1s-8w, broken sand 1519-1600 ft, td 2454 ft, perf, pump 5 bbls oil. Mudge Oil Co.'s Cobb A-14, ne ne nw ne 1-2s-5w, sand 712-30 ft, sand 745-57 ft, sand 760-83 ft, sand 785-812 ft, td 812 ft, shot 20 qts, pump 10 bbls oil.

OLD WELLS DEEPENED

Caddo County: Apache—Sinclair Prairie's Lewis 1, ne ne sw 2-5n-12w, Bromide sand zone 3281 ft, top of pay 3305 ft, otd 3342 ft, td 3500 ft, flow 3420 bbls oil, 2,880,000 gas.

Kiowa County: Hobart — H. J. Sherman's Watkins 4, se sw nw 20-7n-17w, otd 1150 ft, lime 945 ft, td 1657 ft, pb 1100 ft, 500,000 gas.

Lincoln County: Skellyville — Leader Oil's Morrow 1, se nw nw 5-15n-6e, otd 3780 ft, td 4025 ft, pb 3800 ft, 3 bbls oil, 2,000,000 gas.

Stephens County: Velma — Skelly's Steifal 4B, se ne sw nw 35-1s-5w, otd 761 ft, broken sand & shale 761-800 ft, td 800 ft, pb 715 ft, abnd.

Kansas

Cities Service Well Opens New Production

Rich new discovery for Reno County; new pool may be opened in Stafford County; Bartlesville sand production opened in Chase County.

Reno County: Cities Service Oil Co.'s Morton 1, NWc SE 17-28s-4w, 4 mi west of Abbeyville pool, drilled to 3195 ft in Kansas City-Lansing lime topped at 3180 ft, perforated casing, well swabbed 47 bbls oil and 27 bbls water per hr, operator continuing testing.

Stafford County: Adair & Morton's Roberts 1, CN½ NE NE 14-21s-12w, 3 mi north of Max pool, topped Arbuckle doolmite at 3353 ft, cored 3361 ft, recovered 7 ft saturation with no water showing, casing set on dolomite top for test, may open new production.

Chase County: Aladdin Petroleum Co. et al's Drummond 1, C SE SW 15-20s-7e, east of Clements, topped Bartlesville sand 3315 ft, drilled to 3335½ ft, well swabbed 45 bbls oil in 24 hrs to open new field, operators still testing.

COMPLETIONS

Barton County: Krier — Black - Marshall's Redtzke 1, se sw se 19-16s-11w, Basal Sand 3356 ft, td 3360 ft, shot 5 qts, pump 265 bbls oil.

Barton County: Prusa—B.B.&M.'s Esfeld 6, sw se se 28-16s-11w, Arbuckle 3390 ft, td 3394 ft, 1500 gals acid, 1662 bbls oil.

Barton County: Kraft—Central Pet.'s Steuder 1, c e½ nw se 10-17s-11w, Arbuckle 3286 ft, td 3306½ ft, 1000 gals acid, pump 140 bbls oil. Stanolind's Socken 2, se nw nw 22-17s-11w, Arbuckle 3292 ft, td 3298 ft, 3000 bbls oil.

Barton County: W. Silica—Phillips' Petz 4, cwp sw ne 7-20s-11w, Arbuckle 3319 ft, td 3339 ft, 500 gals acid, 2641 bbls oil. Simpson Oil's Duncan A-2, csp ne nw 8-20s-11w, Arbuckle 3387 ft, td 3398 ft, dry.

Barton County: Wildcat — Helmerich & Payne's Kent 1, c s½ sw ne 31-18s-13w, Anhy 804 ft, Topeka 2840 ft, Heebner 3072 ft, Dodge 3080 ft, base Oread 3095 ft, Lansing 3156 ft, Congl 3393 ft, Arbuckle 3400 ft, abnd 3434 ft.

Butler County: El Dorado—Cities Service's Wilson 211, nw ne sw 8-25s-5e, KC 1979 ft, td 2053 ft, 2000 gals acid, pump 24 bbls oil; Chesney 121, nw se se 21-25s-5e, KC 1925 ft, td 2203 ft, pump 15 bbls oil.

Cowley County: Wildcat—Tulsa Oil et al's Pruett 1, nw sw ne 14-32s-5e, Bartlesville 3020 ft, td 3113 ft, pb 3044 ft, pump 188 bbls oil.

Greenwood County: Virgil — Jackman & Jackman's Fankhauser 1, ne nw nw 16-23s-13e, Miss Lime 1770 ft, td 1803 ft, 2000 gals acid, pump 30 bbls oil.

Kingman County: Cunningham — Skelly's Leisman 7, c s½ s½ sw 20-27s-10w, Arbuckle 4078 ft, perf, td 4183 ft, 7500 gals acid, 17,100,000 gas.

Marion County: Lost Springs—Ring Mac's Hajek 3, c e½ se sw 33-17s-4e, Miss Chat 2387 ft, td 2420 ft, pump 182 bbls oil.

Norton County: Wildcat — Helmerich & Payne et al's Voss 1, ne ne sw 19-5s-21w, Anhy 1844 ft, Topeka 3190 ft, Lansing 3424 ft, Base KC 3635 ft, granite wash 3705 ft, granite 3731-33 ft, td 3733 ft, abnd.

Phillips County: Ray—Cities Service's Pinkerton 5, sw ne sw 29-5s-20w, Arbuckle 3628 ft, td 3691 ft, perf potential 3000 bbls oil.

Pratt County: Cunningham—Drillers Gas' Greber 3, c s½ ne se 35-27s-11w, Lansing 3485 ft, td 3623 ft, 5000 gals acid, perf pump 864 bbls oil.

Reno County: NE Peace Creek—Leader's Tonn 2, ne sw sw 11-23s-10w, Viola 3756 ft, td 3766 ft, 500 gals acid, potential 3000 bbls oil.

Reno County: Peace Creek—Magnolia's Yust 3, sw ne sw 15-23s-10w, Viola 3765 ft, td 3774 ft, 1000 gals acid, potential 3000 bbls oil.

Rice County: Haferman—McPherson Drlg.'s Campbell 3, nw se se 8-19s-9w, Arbuckle 3233 ft, td 3237 ft, potential 2550 bbls oil.

Rice County: Chase—Cities Service's Young 2, ne sw se 8-20s-9w, Arbuckle 3244 ft, td 3255 ft, 2000 gals acid, potential 591 bbls oil.

Rice County: Wherry — K. D. Holland's Brothers 2, nw se se 12-21s-7w, Congl 3451 ft, td 3478 ft, Pay 3460-3464 ft, perf pump 25 bbls oil.

Rooks County: Laton—Vickers' Blank 1, c s½ s½ ne 14-9s-16w, Lansing 3234 ft, td 3363 ft, pay 3350-3356 ft, 3000 gals acid pump 244 bbls oil.

Rooks County: Gorham—El Dorado Ref.'s R. P. Mills 1, c e½ se sw 12-14s-15w, Lansing 3003 ft, td 3093 ft, 5000 gals acid pump 421 bbls oil.

Rooks County: Wildcat—Derby et al's Steele 1, c n½ nw nw 9-6s-20w, stain 3351-55 ft, Lansing 3359 ft, stain 3404-06 ft, and 3415-29 ft, Base K.C. 3549 ft, Basal sand 3613 ft, cored 3615-25 ft, rec 1½ ft sand show oil, td 3639 ft, granite wash 3636 ft, granite 3638 ft, gravity 28.8, 183 bbls oil.

Russell County: Greenvale—Central Pet.'s Kuhnle , c e½ se sw 4-15s-12w, Lansing 2999 ft, td 3314 ft, pb 3100 ft, perf, 5000 gals acid, pump 1030 bbls oil, 15% water.

Russell County: Gastason—Stanolind's Kastrup 1, c s½ sw nw 14-15s-12w, Arbuckle 3197 ft, td 3200 ft, 500 gals acid, pump 240 bbls oil, trace water.

Russell County: Anschutz — Stanolind's Letsch A-3, c s½ nw se 4-15s-13w, Dodge 2887 ft, td 3044 ft, pb 2910 ft, perf, 3000 gals acid, pump 418 bbls oil, 15 bbls water.

Stafford County: Beford — Harry Gore's Heyen 1, nw se ne 28-23s-12w, Arbuckle 3842 ft, td 3852 ft, 1000 gals acid, 168 bbls oil.

Stafford County: McNaughten—Ohio's Sutton 1, se nw sw 27-24s-13w, Arbuckle 4157 ft, td 4200 ft, dry.

OLD WELLS DEEPENED

Butler County: El Dorado—Cities Service's Wilson 139, ne nw sw 8-25s-5e, otd 1737 ft, Kansas City 1952 ft, td 2030 ft, 2000 gals acid, pump 20 bbls oil and 45 bbls water.

Stafford County: Richardson — Republic Nat.'s Hart 1, nw sw se 20-22s-11w, otd 3629 ft, Arbuckle 3619 ft, td 3647 ft, 1500 gals acid, 9 bbls oil, 20% water.

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Nebraska

Saturated Viola Lime Indicates New Field

Saturation indicates possible first Viola lime production for Cornhusker state; ninth producer being added prolific Barada pool.

Dawson Pool: Power Oil Co.'s Bohrer, C E½ SW NW 10-1n-14e, fourth well in the small Richardson County pool, topped Viola lime 2922 ft, cored to 2940 ft for recovery of saturated lime, set casing on top of section for test, may open first Viola production, attempts in four other pools unsuccessful.

Barada Pool: Skelly Oil Co.'s Mack 1, C W½ SW SW 25-3n-16e, being completed as 9th producer in 1941 discovery of Richardson County, test topped Hunton lime at 2480 ft, drilled to 2530 ft and was installing pump for test. Operators' Steinbrink 2, CW½ NE NW 36-3n-16e, was building derrick. Davisson and Goodenkauf's Schawang 1, C NW SW 34-3n-16e, 2 mi west of Barada, drilling 1750 ft.

Rocky Mountain Area

Pilot Butte Deep Test Coring Embar Formation

Pilot Butte test tops Embar objective. Another eastern Colorado wildcat fails.

Pilot Butte: Superior Oil Co. of California and British American Oil Producing Co.'s Tribal 1, SE SW SW 15-3n-1w, deep rotary test of unexplored beds of Pilot Butte field, Fremont County, Wyoming, topped first objective, Embar, at 5845 ft and preparing to core. Test topped red beds 4485 ft.

Kit Carson: Another disappointment for eastern Colorado wildcatting, O. E. Torrey's Whitson 1, NW NW SE 12-13s-49w, Kit Carson area, Cheyenne County, had hole full of sulphur water from 4819 feet from Pennsylvania lime, and is shut down for orders. Test had some saturation from 4810-12 ft, virtually same level encountered by Gulf's failure in 1938 half mile to south. Elevation of Torrey test is 4491 ft.

Montana

COMPLETIONS

Glacier County: Cut Bank—Cobb & Jeffries' Stufft 2, ne se ne 3-35n-6w, cable, Lower Cut Bank 2990-3005 ft, plugged-off 3005-3020 ft, td 3033 ft, shot 100 qts, pump 35 bbls. Texas Co.'s State M-455 10, c sw sw 16-32n-5w, Lower Cut Bank 2850-77 ft, td 2880 ft, swabbed 172 bbls.

New Mexico

COMPLETIONS

Eddy County—V. L. Arnold et al's Arnold 3-B, nw sw sw 26-17s-30e, flow 27 bbls, 2-in, shot 40 qts, 3245-55 ft, td 3259 ft. Etz Oil Co.'s State-Humble 5-A, nw ne se 16-17s-30e, flow 40 bbls, ¾-in, shot 120 qts, 2095-2125 ft. Flynn-Welch & Yates' Gissler 3-B, sec 8-17s-31e, abnd 3267 ft. Allen Hargrave et al's Hargrave 2, se nw nw 15-20s-30e, flow 192 bbls, 2-in, 1620-33 ft. Sanders Bros. et al's Leonard 2, c sw sw 34-16s-30e, flow 98 bbls, 2-in, shot 150 qts, 2955-3000 ft, td 3014 ft.

Lea County: Vacuum—Texas Co.'s State 5-AC, c sw se 2-18s-34e, flowed 141 bbls natural, lime 4435-4715 ft.

McKinley County — Petroleum Products Corp.'s Santa Fe 22, c n½ ne nw 1-17n-9w, pump 27 bbls, 1554-94 ft; Santa Fe 23, nw se ne 1-17n-9w, pump 26 bbls, 1528-70 ft; Santa Fe 24, nw sw se 36-18n-9w, pump 28 bbls, 1514-60 ft.

Wyoming

COMPLETION

Carbon County: Rock River—Ohio's Diamond Cattle 3, csl ne se 27-20n-78w, rotary, Dakota sand 3425-3517 ft td, pump 205 bbls.

West Texas

Andrews County Well Gets Good Flow From Permian

Andrews County wildcat makes flow of high-gravity oil from Lower Permian to become important development for basin. Crockett County lists trio Ellenberger failures, including wildcat. Northeastern Pecos County Ordovician project confirms favorable structural position through numerous shows in Permian. Lease assignments in Waples-Platter pool, Yoakum County, require continuous development.

Andrews County: Fullerton Oil Co.'s Wilson 1, NE SW SE PSL Sec 15, Blk A-32, situated amidst failures in regular permian lime near center of northwest quarter of county, kicked off with natural flow through tubing after swabbing down 1500 ft to become the first well in county and general area to produce from Clear Fork, Lower Permian. The well flowed in pit one hour then gauged 235 bbls 40-gravity oil 1-in choke 15 hours with gas volume rated at 150,000 ft daily. Responded to treatment with 1500 gals acid flowing 41 and 33 bbls first two hours, gas-oil ratio 365/1, and will be reacidized. Production is from 360 perforations at 7215-75 ft, with hole plugged back from lime and chert at 8005 ft and 5½-in cemented at 7285 ft General area has received intensive lease and royalty play, trending north and south, since Wilson 1 flowed oil and gas January 5 through tester at 7222-7324 ft. Discovery logged top Yates at 2880 ft and solid lime 4470 ft, elev 3382 ft. Fullerton has started north and west offsets before attempting to complete its first well. Magnolia and Atlantic each have 8-inch trunk lines reasonably close to the new pool.

Pecos County: Magnolia's Price 1, SEc N½ H&GN 4, Blk 12, 6 miles east by north of recently opened Wentz deep pool and 8½ miles southwest of McCamey, is a standout prospect with Ordovician as its goal through having logged intermittent shows of sulphur gas below 2790 ft in Permian while progressing to 4350 ft. The area involves structural conditions similar to those present in the Wentz and Conry-Davis pools, which are on steep granite uplifts.

Abell: Stanolind's Grove 1, Lot 5, H&GN 26, east edge test, became field's second Ellenburger producer in pumping 165 bbls 41-gravity oil, plus 36 percent water, at 5932 ft, having entered Ellenburger 5770 ft, elev 2387 ft. Magnolia's Lutz 1, northeast outpost, tested water in the Tubb (Clear Fork) 3900-ft lime, and was drilling at 4540 ft to explore Ordovician. In Conry-Davis pool, Texas Co.'s Williams 1, southwest edge producer, made 344 bbls initial ½-in choke after acid through perforations in upper pay at 2280-2305 ft, having plugged back from 4090 ft. It is second producer for this Permian zone. In Apco pool, Humble's Shearer 2, offsetting production, abandoned in sulphur water at 5356 ft in Ellenburger, topped at 4710 ft, involving first test in area to penetrate Ellenburger any appreciable depth without reaching granite.

Yoakum County: Development of Waples-Platter pool and Ownby northeast extension sector will be on a continuous basis through Drilling & Exploration Co.'s acquisition of 13 80-acre tracts from Shell Oil Co., which reserved deep rights and sliding scale royalty. The first test is slated to start by mid-March as east offset to Waples-Platter pool discovery, then new operation to follow within 30 days after each completion.

Crockett County: Moore Exploration Co. and Olson Oil Co.'s Halff 2-C, ⅞-mile west of Soma-Noelke shallow pool and first deep test in area, was awaiting orders after running electric log at 6977 ft in Ellenburger, topped at 6740 ft, elevation 2316 ft. In Todd Deep pool, Amerada et al's Todd 2-F, northwest offset to natural oil producer in Crinoidal, abandoned in Ellenburger 6282-6305 ft after thorough test of this dolomite and the Crinoidal, topped at 6050 ft, elevation 2507 ft, being 323 ft low on latter marker. Partnership's Todd 1-G, 2 miles west by south of the pool, abandoned in Ellenburger 6792-6890 ft.

Big Well: Gulf, Atlantic and Phillips' Tubb 3-B, C SE SW PSL 28, set potential record for south extension sector Sand Hills field with rating 8123 bbls 38.9-gr oil and 19,909,000 gas, acidized dolomite 5647-64 ft in Ellenbur-

Texas Panhandle

COMPLETIONS

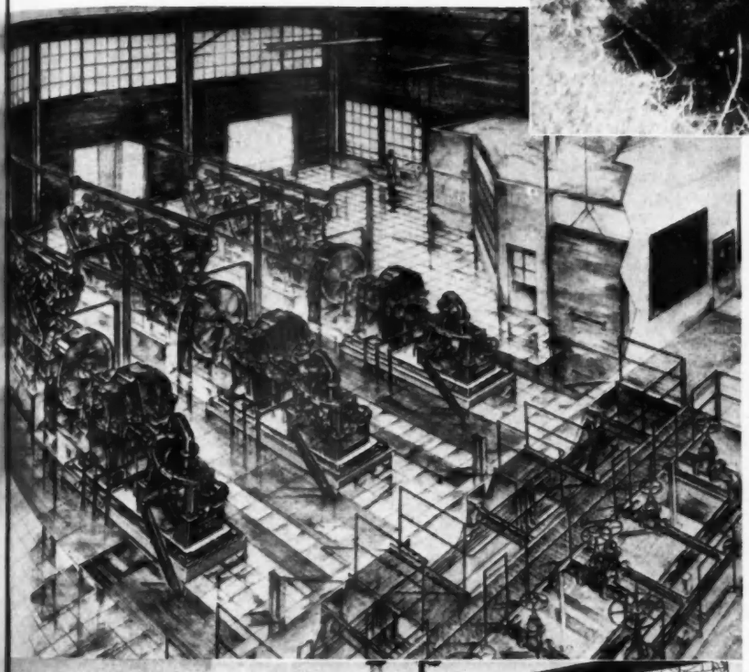
Carson County—Skelly's Schafer 145, I&GN 197, blk 3, pump 255 bbls, shot 520 qts, 3055-3150 ft.

Gray County—Cities Service's Hughey 24-B, I&GN 129, blk 3, pump 63 bbls, 3160-90 ft, td 3217 ft. Crenshaw et al's Benton 10, I&GN 63, blk 3, pump 306 bbls, 3005-85 ft, td 3144 ft. Danciger's Morse 12-A, H&GN 2, blk 26, pump 145 bbls, 90 qts, pay 2389-2408 ft. Dorsyann Oil Co.'s Bull 4, H&GN 3, blk B-2, pump 81 bbls, 2865-2917 ft. Nabob Oil Co.'s Morse 4-B, H&GN 68, blk 25, pump 194 bbls, granite wash 2745-88 ft. Phillips' Swanson (Davidson) 6, H&GN 87, blk B-2, pump 271 bbls, shot 440 qts, 2978-3120 ft. S. & M. Oil Co.'s Worley 14, I&GN 64, blk 3, pump 258 bbls, shot 510 qts, 3148-3232 ft. Skelly's Lovett 8, H&GN 36, blk B-2, pump 204 bbls, shot 540 qts, 2900-3003 ft.

Hutchinson County—J. E. Crosbie's Cockrell 6, sec 14, blk B-3, J. F. Torry sur, pump 135 bbls, shot 470 qts, 2776-2886 ft. Gulf and Panhandle Ref. Co.'s Dial 109, H&GN 2, blk 1, pump 211 bbls 39.4-gr oil, shot 440 qts, 2925-3035 ft. McIlroy Oil Co.'s Cockrell 1-C, nec D&SE 13, blk B-3, pump 266 bbls, shot 700 qts, 2803-2965 ft. Parton & Holt's Whittenburg 11, BS&F 15, blk XOB, pump 154 bbls, shot 470 qts, 2980-3085 ft. Phillips' M. Johnson 8, C&M 34, blk Y, pump 113 bbls, 2997-3010 ft. Stanolind's Mathis 4, ELRy 12, blk L, pump 87 bbls, shot 517 qts, 2920-3013 ft.

Wheeler County — Magnolia's Koons 6, H&GN 43, blk 24, pump 127 bbls, granite-wash 2415-35 ft and 2442-51 ft, td 2457 ft. Portman & Jenkins' Patterson 4, H&GN 89, blk 13, pump 52 bbls, shot 35 qts, 2099-2140 ft.

VENTURA'S OIL *goes through!*



6 INGERSOLL-RAND GAS-ENGINE-DRIVEN PIPE LINE PUMPS *do the job*

Every gallon of the 22,000 barrel line from the Ventura field to Wilmington, Calif., refineries via Shell's 83-mile pipe line depends upon Ingersoll-Rand pumps and engines. At the initial pumping station, four 275-hp V-type gas engine drive Class RT centrifugal pipe line pumps, while the intermediate station at Calabasas has two 485-hp V-type gas engines driving larger pumps of the same class.

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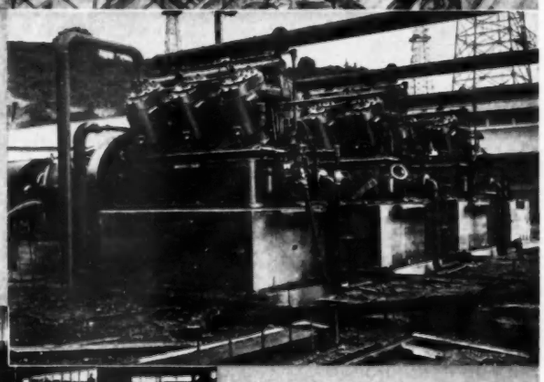
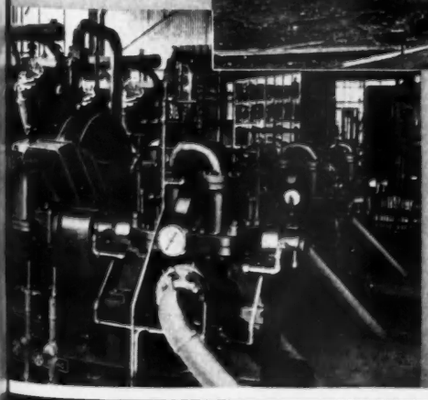
e compact dimensions d full accessibility of gersoll-Rand pipe line mping equipment are early shown in this per- ective scale drawing the Ventura station.





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14-117

ger, topped 5580 ft, or 31 ft high to west offset. Shell's Barnsley 1, southwest diagonal offset to above prolific well and failure in Ellenburger 5627-67 ft, flowed 535 bbls oil and 41 bbls water 23 hours after using 1000 gals acid through Permian perforations 4174-4216 ft. It is 3 miles south of nearest Permian production.

Ward County: Stanolind's Byrd 1, C E¼ of N¼ H&TC 34, Blk 34, wildcat and 3½ miles southeast of Spencer 4-well pool but isolated by failures, tested water in main lime 2855-80 ft, elev 2594 ft, and plugged back to 2800 ft. Test will be made of oil and gas saturation in 2600-ft lime. Stanolind's Spencer 1-B, ½-mile east by south of its Spencer pool discovery, tested 10,750,000 gas at 2923 ft, and is due to be deepened. Shell's Sealy-Smith 1, Ordovician project in northeastern Ward County, drilling dry lime 8490 ft.

Big Lake: Big Lake Oil Co.'s University 19-C, northeast outpost, flowed rate 125 bbls fluid, 20 percent b.s. and rotary fluid, per hour, based on brief test from new Permian pay level at 4235-4380 ft. Test was made through tubing with packer at 4200 ft. Well was scheduled to complete in Ellenburger.

COMPLETIONS

Andrews County: North Cowden—Atlantic & Sun's Holt 6-C, T&P 7, blk 43, T-1-N, flow 279 bbls, shot 800 qts, 4470-4760 ft.

Borden County: Wildcat—T. P. Coal & Oil Co.'s Miller-Looner 1, nwc se T&P 10, blk 33, T-4-N, elev 2702 ft, anhydrite 1310 ft, salt 1380 ft, Yates 1910 ft, solid lime 3333 ft, abnd 3936 ft.

Cochran County: Slaughter — Anderson-Prichard's Neal 12, nwc Leag 57, Refugio CSL, flow 756 bbls cas, acid 14,000 gals, 4907-51 ft. Bieg Oil Co. (was O'Neal Drlg. Co.'s) Wright 1, nec lab 12, leag 60, Martin CSL, 3¼ mi n Slaughter production, pump 425 bbls oil, 5% water, acid 15,500 gals, 4938-83 ft. Honolulu Oil Corp.'s Igoe-Smith 24, swc lab 4, leag 56, Oldham CSL, flow 1131 bbls 2½-in, acid 10,000 gals, 4925-5020 ft; Igoe-Smith 29, nwc lab 8, leag 56, flow 1004 bbls, 2½-in, acid 10,000 gals, 4935-5030 ft. M. S. Inglewright & E. E. Fogelson's Duggan-Houston 3, center lab 14, leag 55, Oldham CSL, flow 880 bbls cas, 11,500 gals acid, 5020-66 ft. Magnolia's Woodley 23, c lab 6, leag 57, Oldham CSL, flow 816 bbls cas, acid 10,500 gals, td 5000 ft.

Crane County: Dune—Wasomes Oil Co.'s University-Standard 3-6, se ne nw sec 6, blk 30, flow 302 bbls cas, shot 540 qts nitro 3210-3381 ft.

Crane County: Sand Hills—Gulf's Waddell et al 35, c ne PSL 20, blk B-26, flow 516 bbls cas, acid 13,500 gals, td 4640 ft; Waddell 36, sec sw PSL 29, blk B-26, flow 538 bbls cas, acid 6000 gals, td 4559 ft.

Crane County: Sand Hills Ordovician—Gulf, Atlantic and Phillips' Tubb 3-B, c se sw PSL 28, blk B-27, flow 8123 bbls 39.9-gr and 19,909,000 ft gas open, acid 6000 gals Ellenburger 5647-64 ft.

Crockett County: Bean—E. M. Wahlenmaier-Steve Currie's Bean 3, c ne ne GC&SF 48, blk UV, abnd 1447 ft.

Crockett County: Todd Deep—Amerada et al's Todd 1-G, c se se GC&SF 15, blk WX, elev 2377 ft, Crinoidal 6295 ft, Ellenburger 6792 ft, abnd 6890 ft.

Ector County: Foster — Cities Service's Johnson 6-A, se nw ne T&P 1, blk 43, T-2-S, flow 284 bbls ¾-in, shot 320 qts, 4110-4210 ft.

Ector County: Goldsmith—Lloyd Noble et al's Cowden-Humble 1, se sw ne T&P 20, blk 44, T-1-N, flow 282 bbls ¼-in, acid 3000 gals, 4155-87 ft.

Ector County: Jordan—Sinclair Prairie's University 4-78, sw nw ne sec 6, blk 35, flow 880 bbls 2-in, acid 2000 gals, 3612-45 ft.

Ector County: North Cowden—Stanolind & Magnolia's Holt 7, nw se T&P 18, blk 43, T-1-N, flow 1003 bbls oil, 65 bbls water, shot 920 qts, 4495-4815 ft.

Gaines County: Wildcat—Likins-Hall and Osage Drlg. Co.'s Jones 1, c sw nw PSL 13, blk A-7, elev 3667 ft, anhydrite 2130 ft, brown lime 4100 ft, San Andres 4750 ft, junked 6438 ft.

Gaines County: Cedar Lake — Stanolind's American Warehouse 10, c nw se D&W 5, blk H, swab 778 bbls, shot 720 qts, 4600-4745 ft, td 4750 ft; Riley 2-B, c sw se D&W 9, blk H, swab 492 bbls, shot 830 qts, 4574-4750 ft, td 4755 ft.

Gaines County: Seminole—Humble and T. P. Coal & Oil Co.'s Blakemore 7-B, c nw se WTRy 232, blk G, flow 600 bbls ½-in, 5130-5322 ft. Magnolia and Atlantic's H. & J. 4-193, c nw nw WTRy 193, blk G, flow 573 bbls, ⅛-in, shot 130 qts, 5135-5214 ft.

Hockley County: Slaughter—Honolulu Oil Corp.'s Slaughter 23-B, swc lab 15, leag 49, Scurry CSL, flow 1586 bbls, 2½-in, acid 10,000 gals, 4955-5030 ft. Magnolia's Mallett 4-B, nec lab 13, leag 50, Scurry CSL, flow 1156 bbls cas, acid 10,500 gals, 5010-40 ft; Mallet 6-B, flow 1274 bbls, cas, acid 10,500 gals, 4950-5013 ft; Mallett 14-D, c lab 2, leag 49, Edwards CSL, flow 1064 bbls, cas, acid 10,500 gals, td 5000 ft; Mallet 9-F, sec lab 14, leag 49, Scurry CSL, flow 1274 bbls, cas, acid 10,500 gals, td 5027 ft. Milhoan Prod. Co.'s Fannin-Slaughter 4, nwc lab 9, leag 42, Maverick CSL, flow 809 bbls, cas, acid 12,000 gals, 4920-59 ft. W. J. Richardson et al's Miller-Sun 3, sec lab 11, leag 42, Maverick CSL, flow 226 bbls 2-in, acid 9500 gals, 4890-4945 ft. Texas Co.'s Mallet 24-E, sec lab 17, leag 49, Scurry CSL, flow 1502 bbls, cas, acid 12,000 gals, 4975-5035 ft; Slaughter 70, sec lab 94, leag 38, Zavalla CSL, flow 419 bbls, cas, acid 12,500 gals, 4970-97 ft; Slaughter 86, swc lab 63, leag 39, Maverick CSL, flow 1766 bbls, cas, acid 15,000 gals, 4975-5023 ft; Slaughter 91, c lab 71, leag 38, Zavalla CSL, flow 1711 bbls, cas, acid 12,000 gals, 4920-5017 ft; Slaughter 92, nec lab 74, leag 38, Zavalla CSL, flow 1217 bbls, cas, acid 12,000 gals, 4965-5025 ft; Slaughter 95, swc lab 86, leag 38, Zavalla CSL, flow 2590 bbls, cas, acid 14,000 gals, 4968-5040 ft; Slaughter 98, c lab 77, leag 38, Zavalla CSL, flow 1468 bbls, cas, acid 12,000 gals, 4950-5025 ft..

Howard County—Moore Explo. Co. et al's Brindley 1, c ne sw T&P 18, blk 33, T-1-S, Harding pool outpost, abnd 3313 ft. F-H-E Oil Co. et al's Denman 1-B, swc nw T&P 14, blk 30, T-1-S, pump 215 bbls, shot 690 qts, 2605-2867 ft.

Nolan County—J. E. Farrell et al's Tipton 1, swc T&P 43, blk 19, sw/o to jkd producer, abnd 5200 ft.

Pecos County: Byrne—C. K. Drlg. Co.'s Iowa Realty 1, H&GN 29, blk 10, elev 2516 ft, abnd sulphur water 1717-33 ft.

Pecos County: Abell — Magnolia's Young-State 2, 330 ft fr sw line lse and 933 ft se No. 1 H&TC 4½, blk 3, flow 1450 bbls 45-gr, ½-in, Simpson 5234-43 ft. Stanolind's Grove 1, c lot 5, H&GN 26, blk 9, 2nd Ellenburger well, pump 165 bbls 41-gr oil 36% water, acid 2000 gals, 5820-5932 ft; Kistley 1, 2010 ft from sw and 660 ft from nw lines H&TC 5, blk 3, flow 2145 bbls, ½-in, Simpson perf 5293-5313 ft, td 5335 ft.

Pecos County: Apco—Humble's Shearer 2, c s½ of s¼ H&GN 99, blk 10, detrital 4660 ft, Ellenburger 4710 ft, abnd 5356 ft in dolomite.

Pecos County: Conry-Davis — Texas Co.'s Williams 1, H&TC 15, blk 2, flow 344 bbls 36-gr, ½-in, acid 570 gals, Permian perf 2280-2305 ft, td 4090 ft.

Stonewall County: Aspermont — Shell's Rutherford 2, swc ne H&TC 144, blk 1, abnd 6345 ft.

Ward County—Gulf's O'Brien 198, nw se se GMMB&A 22, blk F, flow 188 bbls, shot 360 qts, 2560-2645 ft.

Winkler County: Keystone—Sid Richardson and Bass' Jenkins-Keystone-Sun 2, nwc s½ ne PSL 13, blk 77, flow 273 bbls 1-in, shot 280 qts 3340-3460 ft.

Yoakum County: Wasson—American Liberty and Atlantic's Moore-Texaco 9, nw sw sec 734, flow 950 bbls, 2-in, acid 10,500 gals, 5030-5183 ft. Arrow Drlg. Co.'s Security Nat'l Bank-Shell 1, swc s½ 695, pump 124 bbls, 33.4% water, acid 8000 gals, 5246-70 ft. Drlg. & Exploration Co.'s Randall-Humble 7-A, c nw sw 835, flow 541 bbls, 9/16-in, acid 9000 gals, 4880-5120 ft. Gulf Futch 3, c sw sw 796, flow 475 bbls, 2-in, acid 10,000 gals, td 5185 ft. Humble's Randall 17, c sw nw 833, flow 504 bbls, ⅞-in, acid 6000 gals, perf 4990-5090 ft, td 5118 ft. Trinity Drlg. Co.'s Shanks-Sun 2, swc se 700, flow 822 bbls, 10/64-in, acid 12,000 gals, 5205-65 ft.

OLD WELLS DEEPENED

Howard County—H. A. Kinney et al (was M. D. Bryant's) Denman 1, nec sw T&P 10, blk 30, T-1-S, otd 2865 ft, pump 154 bbls, shot 400 qts, 2790-2880 ft, td 2894 ft.

Pecos County: Yates—Shell's Smith 1-C, ne ne GC&SF 38, blk 194, otd 1337 ft, pump 111 bbls, td 1357 ft.

WILDCAT STARTS

Andrews County — Atlantic-Pete Wiggins and Ed Hyde's University 1, c ne nw sec 9, blk 12, lcn for Ordovician test.

Crockett County—Sun's Shannon 1, 660 ft out swc w 1427 ac of n 1800 ac leag 1, Archer CSL sur, lcn, 2500-ft test.

Lubbock County—John R. Sharp and Tobe Morton's T. A. Holman 1, c ne nw sec 12, blk B, J. H. Gibson sur, 3½ mi se Lubbock, lcn 5500-ft test.

Pecos County — Anderson-Prichard Oil Corp.'s Gregg 1, c nw nw T&St LRy 30, blk 140, 12 mi ne Fort Stockton, lcn 6000-ft test.

Ward County—Darby Pet. Corp.'s University-DeVito 1, c se sw 19, blk 16, lcn, 3500-ft test.

North Texas

Clay County Deep Strike Has Good Ungauged Flow

Southwestern Clay County deep strike showing. Foard County wildcat doubtful. Jack County prospect to set pipe for test Bend saturation.

Clay County: Continental Oil Co., Hassie Hunt et al's Watson 1, W. A. Farris Survey, 1¾ miles north of Antelope deep area, opened new pool in flowing pipe line oil with good gas volume while cleaning itself through chokes into pits. No estimate was made of the flow. Production is from lower Pennsylvania 5460-84 ft in Bend section, topped at 5198 ft, being 202 ft low on latter marker than the single Bend lime producer in Antelope pool. Deep Oil Development Co.'s Hapgood 1-A, southeast outpost for New York City pool, failed to make producer in Mississippian 6380-6543 ft, being 261 ft low, and is scheduled to plug back to try for Strawn completion. It is the first disappointment for the 7-well pool.

Jack County: Joe A. Worsham et al's Sewell 1, Daniel Crenshaw Survey A-128, 7 miles southeast of Jacksboro, preparing to set pipe after bailing free oil from Bend saturation at 4677-92 ft. This county currently has an outstanding Bend area through the Hoefle pool having given promise of embracing sizeable territory without a failure. It has more drilling activity than any other 1941 discovery.

Foard County: Bruce Sullivan and Hill & Hill's McCoy 1, 1½ miles east of Crowell, yielded 2 bbls 37-gravity black oil hourly on swabbing test after using 1000 gallons acid through perforations 5592-5600 ft in Bend conglomerate, plugged back from 6019 ft. Doubtful if this wildcat will qualify as commercial well.

Grayson County: Sinclair Prairie's Wheeler 1, 1½ miles southwest of Collinsville and on geophysical prospect, yielded 275 ft of heavy asphalt-base oil and equal volume salt water when tester used in sand 3410-22 ft. Drilling was resumed to explore Ordovician.

Archer County: Continental's Ferguson 1, wildcat between K-M-A and Hull-Silk fields, failed to make producer from promising lime saturation 4511-21 ft in Bend, topped at 4468 ft, and was drilling at 4530 ft to explore Mississippian and Ordovician.

COMPLETIONS

Archer County: Hull-Silk—J. A. Chapman & McFarlin's Wilson 6-F, nec lot 5, ATNCL 22, flow 1008 bbls, ¾-in, acid 3000 gals, 3958-75 ft, td 3980 ft.

Archer County: Wildcat—Hanlon & Buchanan's Clagett 1, 900 ft from n and 1200 from w line Rachael Story sur A-373, Gunsight 1375 ft, abnd 1480 ft.

Archer County—W. C. Young Jr., et al's Morrison 1, nw sw TE&L sec 2403, pump 12 bbls, sand 1261-67 ft, td 1275 ft.

Baylor County: Cowan—British-American's Cowan-Turbeville 4-A, sw se nw T&NO 115, Canyon lime 2539 ft, abnd 2570 ft.

Clay County: Wildcats—Bridwell Oil Co.'s Taylor 3, 750 ft from s and 990 from sw lines BBB&C (G. S. Meyers) sur A-1048, Fusulina 1183-85 ft, abnd 1608 ft. J. M. Seaberry & H. B. Duncan's Tucker 1, 2130 ft from w and 150 from n lines east 753-ac tr, C. F. Stanley sur A-407, abnd 1471 ft. Harry B. Wallace et al's Dallas Jt. Stock Bank-Texaco 1, 1170 ft from sw and 150 from se lines nw-440-ac tr, J. Duncan sur A-112, abnd 1351 ft.

Clay County — Darby-Lynde Co.'s Stine 1-B-S, Parker CSL 7, A-374, abnd 211 ft.

Cooke County: Bindel—Texas Co.'s Bindel 4, 990 ft out swc lse, F. Hughes sur A-439,

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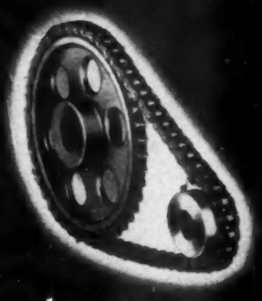
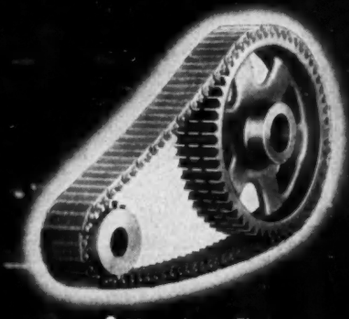
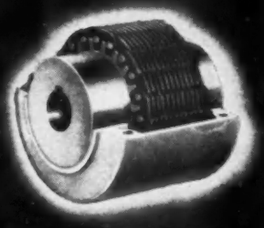
OF POWER FACILITIES



1 Morse Roller Chains

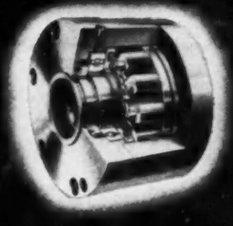


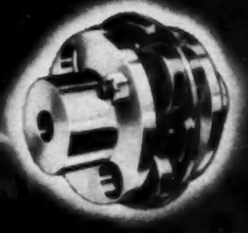
2 Morse Silent Chains



4 Morse Silent Chain Couplings

3 Morse Indexing and Free-Wheeling Clutches





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pump 41 bbls, acid 5000 gals, Ellenburger 3393½-99 ft.

Jack County: Hoefle—Hanlon & Buchanan's Hoefle 1-B swc Asbury James sur A-318, flow 672 bbls, 18/64-in, acid, Bend 4867-4906 ft.

Jack County—Hanlon & Buchanan's Myers 2, F. N. Rudmose sur A-1803, pump 125 bbls, Strawn 2437-42 ft.

Jack County: Wildcat — Roeser-Pendleton et al's W. J. Webb 1, 530 ft from n and 470 from w lines J. E. Middleton sur A-2125, new pool, flow 71 bbls 42-gr oil and 125 bbls water 63/64-in, Strawn 2882-2933 ft.

Montague County: Clingingsmith—Sinclair Prairie's Clingingsmith 2, 990 ft from s and 330 from w sec 149, Jose Olobarri sur, flow 1808 bbls 39.6-gr, acid 1500 gals, Bend 3935-59 ft.

Montague County: Hults-Owens — Larry Hults & Tom B. Owens' Brite 1-A, sec TE&L 2820, flow 2664 bbls, ¾-in, Bend 6033-58 ft.

Wichita County: Wildcat—Fresno Oil Co.'s Nieman 1, sec Waggoner Colony Blk 213, abnd 2697 ft.

Wichita County — Hanlon & Buchanan's Denny 7-A, sec 27, Cowherd subdiv, abnd 879 ft. Lincoln & Moore's Bradley 8, S. Holloway sur A-497, abnd 1833 ft. C. F. Schramm et al's Daume 5, SPRy 1, abnd 779 ft.

Wichita County: K-M-A—Hanlon & Buchanan's Fassett-Tuttle 33-E, SA&MG 4, flow 440 bbls, ¾-in, shot 180 qts, 4021-61 ft.

Wichita County: K-M-A Ellenburger—E. C. Oil Co.'s Mangold 26-E, nw part s½ blk 37, P. Castleman sur, flow 1616 bbls, ¾-in, acid 3000 gals, Ellenburger 4275-4370 ft. Venmex Oil Co.'s Big Wichita River 6-E, flow 720 bbls, ¾-in, Ellenburger 4326-59 ft.

Young County: Wildcat—C. T. Robertson et al's A. C. Wilson 1, 1566 ft from n and 1466 ft from w lines TE&L 67, abnd 1195 ft.

GAS INPUT WELL

Young County—Martin-Harvey & E. R. Riggs' Allison-Bloodworth 1, midway between TE&L 150 and 151, sand 865-72 ft, td 881 ft.

WILDCAT STARTS

Clay County—Bridwell Oil Co.'s H. C. Edrington 17, 2000 ft from w and 4000 from s HT&B 37, A-229, sp.

Young County—Geo. Keith Jr. et al's W. M. Ward 1, 55 ft w and 240 s of sec J. W. Paddock sur, but in L. W. Ross Sur A-1352, lcn.

West Central Texas

Shackelford County Wildcat Pumps 60 Barrels Initial

Shackelford County records shallow wildcat pumper. Gas area in Northeastern Brown County has prospective oil well. Pipe set on Jones County deep wildcat.

Shackelford County: C. J. Kleiner and Heltzel's Dawson-Conway 1-A, SWc N½ ET Ry. 146, and on 550-ft strip lease, pumped 60 bbl 38-gr oil initial, Tannehill sand 1429-35 ft, total depth 1441 ft. Ed Lawson et al's Reeves 1, wildcat in northwest corner county, abnd 3267 ft in Palo Pinto, topped at 3196 ft. Kittery Oil Co.'s Hendrick 1-A, confirmation test for gas area opened in 1940, tested 2,000,000 gas, sand 1614-20 ft, plugged back from 1822 ft. Gas utilized in repressuring shallow oil pools.

Brown County: Guyle Greynolds et al's Boatman 1, BBB&C 25 and south of gas area opened in northeast corner county by same operator last year, tested 6 bbls oil daily from Ranger lime 2918-30 ft. Pipe cemented at 2918 ft after drilling to 2983 ft, and oil zone to be treated with acid, or given nitro shot.

Jones County: Merry Bros. and Perini's Lundgren 1, NE NW NE H&TC 20, Blk 3, wildcat on northeast strike from Avoca pool, cemented 5½-in 3139 ft to acidize Palo Pinto lime, total depth 3376 ft. Dry lime was logged at 3316-55 ft, elevation 1530 ft. In Wimberly pool, Fain-McGaha Oil Corp.'s Tarpley 1, NEc Blk 104, flowed 176 bbls natural 2½ hours, sandy-lime 2325-35 ft, and Butler-Horne Drilling Co. et al's Fikes 1, NEc S½ Blk 105, drilling 2265 ft after mudding off estimated flow 15,000,000 ft gas 2190-2205 ft, being unusually large yield for county.

Coleman County: Jas C. Ellis and Fred Estes' Bridges 1, wildcat and 1¼ miles southeast Talpa, scheduled to resume drilling after failing to maintain commercial production from Adams Branch saturation 2486-2518 ft. This prospect showed for pumper after using 5000 gallons acid, but the fluid level exhausted.

COMPLETIONS

Brown County—Central Texas Gas Co.'s Whidden 1, 3200 ft from sw and 1750 ft from nw lines Wm. Iron sur, 512,000 ft gas, acid 5000 gals 1434-1530 ft.

Coleman County—States Oil Corp.'s Owen 1, T&NO 23, blk 2, flow 127 bbl natural, Strawn, 3610-35 ft.

Comanche County: Wildcats—C. D. Lane et al's Hazzard 1, 3889 ft from nw and 1806 ft from ne lines Marmaduke Hatton sur A-424, abnd 3105 ft. A. H. Woodfin et al's Pettit 1, 700 ft w and 200 ft n swc S. C. Robertson sur, but in Elizabeth Tatum Sur A-938, top Ellenburger 3251 ft, abnd 3276 ft.

Eastland County: Wildcat—Stewart Oil Co.'s Shaeffer 1, 660 ft from e and 1980 ft from s lines 394-ac tr, Moses Allen sur 26, Bend 2703 ft, Barnett shale 3617 ft, Ellenburger 3730 ft, abnd hfw 3787-92 ft.

Jones County—F. Kirk Johnson-Ungren & Frazier's Sayles 10, T&P 6, blk 10, abnd 2065 ft.

Shackleford County—C. B. Christie et al's Reynolds 4, T&P 24, blk 11, pump 4 bbl 1253-57 ft. R. H. Roark et al's Elliott 1-B, c se sw Lunatic Asylum Lands 9, 1st oil for Strawn in area, flow 107 bbl oil and 10 bbl w 5/16-in natural, Strawn 2903-40 ft, plugged back from hfw in Ellenburger 4355-95 ft.

Stephens County—Knight & Ewing's McKelvain 1, O. A. L. sec 11, flow 15 bbl acidized 1500 gals 3498-3515 ft td 3530 ft.

Taylor County: Merkel—Staley Oil Co.'s Morgan 2, SWc e½ blk 8, Grimes CSL sur, elev 1797 ft, abnd 2808 ft.

WILDCAT STARTS

Callahan County—Geo. Donnelly et al's H. M. Kennard 1, c se ne ETRy 9, lcn.

Comanche County—C. D. Lane et al's C. M. Adams 1, 660 ft from sw and nw lines J. C. D. Scott sur A-860, lcn.

Texas State-Wide Hearing Set for February 16

The Texas Railroad Commission has scheduled its next state-wide proration hearing for February 16. Other hearings listed include:

February 13—Application of Kerlyn Oil Company and Phillips Petroleum Company for rules to govern the area surrounding E. C. Garvey 1 well in Young County.

February 13—Application of Edward C. Lawson for rules for the area surrounding well in J. M. Cass Survey, Haskell County.

February 13—Amendment of rules for Bammel, Harris County.

February 14—Amendment of unit rule in Ivy field, Shackelford County.

February 18—Rules for new reservoir discovered by L. H. Wentz-Gulf Oil Corporation's E. H. Miller 2 in Section 43, Block 11, H&GN Survey, Pecos County.

February 18 — Rules for area surrounding Sun Oil Company's L. Wiederkehr 77 producing from the 1800-foot horizon in the North Government Wells Yegua field, Duval County.

Panhandle Gas

The Texas Railroad Commission has fixed the sour gas allowable for Panhandle at 672,000,000 cubic feet daily during February.

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East Texas

COMPLETIONS

Kilgore Area—Jim McMurrey et al's Hirsch 2, M. V. Winkle sur, pump 640 bbls 3542-70 ft.

Anderson County: Long Lake—Tide Water Associated and Seaboard's Shaw-Cern 18, 3800 ft w and 600 ft s swc Brantley tract, D. Parker sur, 40,000,000 gas, 1960 lbs pressure, 14 bbls distillate per million, Woodbine 5164-69 ft and 5266-70 ft.

Henderson County: Wildcat—Iowa Payne Oil Co.'s Weisner-Humble 1, 660 ft out swc 85½-ac tr, Mathew Gollher sur, 2 mi ne Frankston, elev 383 ft, Pecan 2375-2654 ft, Austin 4510-4740 ft, Woodbine 5004 ft, water sd 5070-92 ft, abnd 5126 ft.

Houston County: Wildcat—O. W. Killam et al's Houston County Coal Co. 2, James Henley sur, 1¼ mi n Lovelady, elev 264 ft, sand 2290-2310 ft, abnd 3418 ft.

Limestone County: Barron—Zephyr Oil Co.'s Barron 1, nwc 320-ac tr, E. Mabry sur, 43,000,000 gas, 5 bbls distillate per million, acid 3000 gals, Pettit 5586-5698 ft.

Navarro County: Wildcat—L. T. Davis et al's Stevenson 1, 330 ft from n and 990 from w lines 25-ac lse, T. J. Jordan sur, Bazette area, elev 409 ft, Pecan 1996-2235 ft, Austin 2447-2663 ft, Woodbine 3040 ft, sand 3090 ft, abnd 3120 ft.

Red River County: Wildcat—O. T. Clark and Alex Snyder's Edmondson 1, 467 ft from s and 5600 from w of Daniel Perkins sur, Paluxy 1391-1469 ft, abnd 1520 ft.

Wood County: Hawkins—Humble's Allen 2-D, most northeasterly southeast cor 444.37-ac, Geo. Brewer sur, flow 634 bbls, ½-in, Woodbine perf 4668-4842 ft, td 4852 ft; Greer 1, most westerly nw cor 13.06-ac tr, A. W. McKnight sur, flow 279 bbls, ½-in, Woodbine perf 4683-4742 ft, td 4788 ft; J. B. Smith 2, most southerly sw cor 127.23-ac lse, W. Herrington sur, flow 422 bbls, ¼-in, Woodbine perf 4768-4821 ft, td 4863 ft. C. L. McMahon et al's Snider 5, 107.8-ac lse, J. P. Moseley sur, flow 308 bbls, ¼-in, Woodbine perf 4716-96 ft, td 4826 ft, Rudco O&C Co.'s Minchew 1, nwc 4.3-ac lse, Geo. Brewer sur, flow 454 bbls ¼-in, Woodbine perf 4560-4670 ft, td 4794 ft. Stanolind's Christian Women's Board 2, 354 from n and 1653 from w of 104.42-ac lse, S. Castleberry sur, flow 273 bbls, ¼-in, Woodbine perf 4664-76 ft, td 4815 ft. Texas Co.'s Cobb 7, 160.4-ac lse, J. G. Heard sur, flow 276 bbls, ¼-in, Woodbine perf 4743-90 ft, td 4851 ft.

Southwest Texas

Bee County Carrizo Strike Flows Pipe Line Oil

Further expansion of oil reserves in the Carrizo-Wilcox zone of Southwest Texas are foreseen with new tests being run in wildcat operations along the lower Gulf Coastal trend. The consequence of this formation series is definitely displayed by the high ratio of discoveries to explorations.

Bee County: Tom Slick's M. T. Grissom 1, McEarly survey, discovery of South Caesar field, flowed rate of 165 bbls 42.8-gr pipe-line oil through 7/64-in choke under 1150 pounds equalized pressures from perforations 6552-57 ft, bottom part Carrizo sand; originally flowed from this level under high gas-oil ratio, but squeeze job cut that ratio to about 500/1. This is first Carrizo oil production in Southwest Texas.

Colorado County: Shell Oil Co.'s Plow 4, north outpost and deep Wilcox sand discovery in Sheridan field, testing distillate from perforations 10,-750-085 ft, is credited with 200 ft of solid sand.

Karnes County: Phillips Petroleum Co.'s V. D. Strunk 1, C. Martinez gr, 3½ miles southeast Kenedy, drilled to 8514 ft, toward sand with oil odor in Wilcox, set 5½-in casing, is perforating.

Lavaca County: W. Stewart Boyle's F. Roecher 1, M. Wooten sur, 3 mi sw Vienna, perforated 8994-97 ft in Wilcox, flowed gas, dist and sw, reperf 8438-40 ft and testing.

Bastrop County: H. A. Pagenkopf's E. Bell et al 1, Black sur, 14 mi nw Bastrop, acidized and testing Edwards lime 3132-50 ft.

Jim Wells County: Plymouth Oil Co.'s J. J. Kuck 1, 1 mi e Orange Grove field, logged sand series including one at 3676-88 ft in Frio, set 5½ at 5200 ft, testing through perforations.

Starr County: Sun Oil Co.'s Garza 1, ne offset to initial producer in North Sun area, logged sand 4550-62 ft, showed oil, found water in deep pay at 5418 ft, pb and perf 4553-56 ft, testing. This is either new sand in North Sun area or major extension to same zone in Sun field. Series of tests apparently merging Sun and Kelsey pools.

COMPLETIONS

Bexar County: Wildcat—Nick Marosis et al's McMonagel 1, T. McGreal sur, 14 mi sw San Antonio, abnd 775 ft.

Caldwell County: Bee Creek—R. R. Ogden's Miears et al 1-B, Swearingen sur, abnd Austin 2296 ft.

Calhoun County: Wildcat — Amerada's Lavaca-State 1, tr 10, Matagorda Bay, 1¼ mi e Port Lavaca, abnd 8949 ft, heaving shale.

Duval County: Casa Blanca—M. L. Massingill's DCRC 5, Sec 293, pump 44 bbls 21-gr oil, 1% sw, gas/oil ratio 100/1, sand 1068 ft, td 1105 ft.

Duval County: Hoffman—Magnolia's Well 24, Sec 495, pump 59.55 bbls 21.3-gr oil, gas/oil ratio 100/1, sand 2688 ft, td 2696 ft; Well 25, Sec 495, pump 63 bbls 21.3-gr oil, gas/oil ratio 100/1, sand 2674 ft, td 2686 ft.

Jackson County: Ganado—Texas Co.'s Tunison 2, sec 9, flow 155.69 bbls 37.6-gr oil, ⅛-in chk, 1020 lbs tp, cas sealed, gas/oil ratio 970/1, perf 6432-42 ft, sand 6430 ft, td 6660 ft.

Jackson County: Lolita—Cox & Hamon's Z. Mitchell 2, S. F. Austin sur, flow 102.6 bbls 31.3 gr oil, ⅛-in chk, 590 lbs tp, 880 lbs cp, gas/oil ratio 500/1, perf 5292-95 ft, sand 5288 ft, td 5960 ft. Magnolia's Wesson & Cox 3, blk 192, LaWard sub, flowed 105.27 bbls oil 9/64-in chk, 850 lbs tp, 1325 lbs cp, gas/oil ratio 7460/1, perf 6377-95 ft, sand 6380 ft, td 6401 ft.

Jackson County: Maurbro—Humble's F. S. Robbins 9, blk 9, White league, flow 119 bbls 23.4-gr oil ⅛-in chk, 475 lbs tp, 660 lbs cp, gas/oil ratio 194/1, sand 5221 ft, 5½-in 5209 ft, td 5230 ft.

Jackson County: N. LaWard — Humble's Four-Way Ranch 4, sec 3, blk 60, flow 528 bbls 25-gr oil, ¼-in chk, 525 lbs tp, 600 lbs cp, gas/oil ratio 400/1, sand 5206 ft, 5½-in cas 5205 ft, td 5213 ft. Salt Dome Oil Corp.'s W. R. Farquhar 1, blk 8, Clement sub, ½ mi w outpost, high but field sand shaley, abnd 6619 ft.

Jim Hogg County: Chaparosa — Adams, Neuhaus & Lucky's Gallagher 4, Blk 287, El Randado gr, sw in Chaparosa gas sand 2775-90 ft, abnd 3512 ft.

Jim Hogg County: Colorado—C. Andrade III's F. G. Trevino 4-G, L. Ramirez sur 37, flow 172 bbls 48-gr oil 3/16-in chk, 200 lbs tp, 500 lbs cp, gas/oil ratio 300/1, top sand 2878 ft, 5½-in 2878 ft, td 2885 ft. Humble's King Colorado 46-B, Las Moritas Gr, flow 95.91 bbls 46.5-gr oil 3/16-in chk, 125 lbs tp, 500 lbs cp, gas/oil ratio 190/1, sand 2912 ft, 5½-in 2901 ft, td 2921 ft.

Jim Wells County: Seeligson — Sun's Praxidas Canales 4, sec 182, flow 170.43 bbls 43.6-gr oil 9/64-in ch, 800 lbs tp, cas sealed, gas/oil ratio 725/1, perf 5954-58 ft, sand 5915 ft, td 5988 ft.

Jim Wells County: Wildcat — Arkansas Fuel's A. West 1, Casa Blanca Gr, 1¼ mi se Sandia, abnd 5607 ft.

Lavaca County: Wildcat, Provident City Discovery—Shell's F. W. Neuhaus 1, 1476-ac tr, J. D. Ragsdale sur, 5 mi nw Provident City, flow 91 bbls 48.4-gr oil, ¼-in chk, 2850 lbs tp, 2550 lbs cp, gas/oil ratio 34,800/1, perf 8750-70 ft, Wilcox 8746-90 ft, 7-in cas 8849 ft, td 10,169 ft; new field.

Live Oak County: S. White Creek—J. D. Stelzig et al's Decrough 2, td 3406, blk 72, se outpost, abnd 1963 ft. Woodman & Norcross's Needham 1, tr 3415 ft, blk 73, abnd 2370 ft.

Nueces County: Agua Dulce—C. P. Burton's J. C. Ingram 2, sec 8, flow 87 bbls 43-gr oil, 9/64-in chk, 1035 lbs tp, 1300 lbs cp, gas/oil ratio 1675 ft, perf in sand topped 6396 ft, td 6443 ft. H. H. Howell's W. Schultze 9, blk 2, sec 3, flow 28 bbls 55-gr dist ⅛-in chk, 2100 lbs tp, 2250 lbs cp, show sw, gas/oil ratio est 20,000/1, perf 6942-58 ft, sand 6938 ft, td 7000 ft. Mid-Continent's W. T. Cage 1, sec 206, flow 126.61 bbls 38.6-gr oil, 6/64-in chk, 1790 lbs tp, 2550 lbs cp, gas/oil ratio 933/1, perf 6986-98 ft, sand 6983 ft, td 7030 ft. Renwar Oil Corp.'s J. B. Knight 2, sec 184, flow 203.8 bbls 38.6-gr oil, ⅛-in chk, 1150 lbs tp, 1350 lbs cp, gas/oil ratio est 650/1, perf 7095-7105 ft, sand 7068 ft, td 7115 ft. Texon Royalty Co.'s C. J. Horne 7, Palo Alto gr, flow 196.7 bbls 38.5-gr oil ⅛-in chk, 1720 lbs tp, 2050 lbs cp, gas/oil ratio est 950/1, perf 7049-56 ft, sand 7045 ft, td 7057 ft.

Nueces County: Luby—Stanolind's Spessard 38 CDC sur, flow 139.35 bbls 46-gr oil, ⅛-in chk, 1280 lbs tp, 2000 lbs cp, gas/oil ratio 900/1, perf 5173-76 ft, sand 5150 ft, td 5178 ft.

Nueces County: Stratton—Southern Minerals' Stratton-Community 34, sec 199, flow 86.5 bbls 42.2-gr oil 7/64-in chk, 980 lbs tp, 1280 lbs cp, perf 6613-21 ft and 6628-36 ft, gas/oil ratio 950/1, sand 6610 ft, td 6665 ft.

Refugio County: Greta—Monday Oil Co.'s Heard 2, Peoples sur, flow 85 bbls 23.8-gr oil ⅛-in ch, 400 lbs tp, 575 lbs cp, gas/oil ratio 300/1, perf 4390-4400 ft, td 4450 ft.

San Patricio County: Wildcat, South Sinton Discovery—Tide Water Associated Oil Co.'s S. A. Loan & Trust Co. 1, 813.18-ac tr, M. McAuley sur, ab 13, 3 mi sw Sinton, flow 4,550,000 gas and 15 bbls 53.9-gr amber dist, ¼-in chk, 2500 lbs tp, 2560 lbs cp, perf 6673-82 ft, shut in, 2640 lbs, dist sand 6662-77 ft, sand and shale oil odor 6677-82 ft, elev 59 ft, 10¾-in cas 1203 ft, 5½-in 6687 ft, td 6687 ft, new field.

Starr County: Sun—Humble's V. Saenz et at 1, Juan Jose Sais gr, flow 80 bbls 46-gr oil ¼-in chk, 425 lbs tp, 975 lbs cp, gas/oil ratio 680/1, sand 4635 ft, 5½-in 4630 ft, td 4652 ft.

Starr County: Wildcat—Sun's SCCC 1, Sec 46, 10 mi se Cuevitas fld, abnd 5120 ft.

Victoria County: Wildcat—Mayo & Manahan's Woodhouse 1, F. Dimmitt gr, 2 mi s Hughes field, abnd 6007 ft.

Webb County: Wildcat—Forest Dev. Corp.'s A. O. Hoogterp 1, sec 1110, 2 mi nw Mirando City, tested oil, gas, sw at pb td 1520 ft, abnd 1900 ft. W. C. McBride's J. O. Walker 2, sec 1012, 7 mi n Oilton, top Mirando 1822, Lower Rosenberg 2430 ft, Bruni 2935 ft, abnd 2987 ft.

Zapata County: Lopeno—H. H. Coffield's Juan Ramirez 1, Por 17, 1 mi s Lopeno fld, abnd 2587 ft.

Zapata County: Wildcat—V. G. Schimmel's F. Cuellar 1, Sec 119, 1 mi e Cuellar fld, abnd 2008 ft.

WILDCAT STARTS

Bexar County—H. L. Bedwell's Russell 1-A, sur 16, 12 mi s San Antonio, mi 1000-ft test.

Duval County—Henderson Coquat's Hyatt 1, lot 6, Sweden Farm Lots sub, 4 mi sw Benavides, ru 6000-ft test.

Karnes County—Capricorn Pet. Co.'s F. P. Moczygemba 1, E, Seguin gr, 1 mi s Falls City, mi 5000-ft test.

Starr County—Sun's Montalvo 1-A, sh 9, La Sal Colorado Gr, 2 mi w of s end Kelsey fld, len 7500-ft test; Garcia L&L Co. 1-A, Y Trevino Gr, Por 97, 13 mi e Rio Grande City, len 6000-ft test. Forest Dev. Corp.'s R. S. de Mendoza 1, sur 301, 20 mi nw Rio Grande City, len 2500-ft test.

Texas Gulf Coast

Wildcat Drilling and Locations Show Gain

Wildcat locations and drilling show increase. Willis area wildcat, Montgomery, to drill deeper in Wilcox.

Wildcats: Locations on both new and old prospects on the Gulf Coast have gained during the past 10 days; many will be deep tests. Humble Oil & Refining Co. will start soon on a 9500-ft Wilcox test near New Ulm in Austin County. Magnolia Petroleum Co. has staked a deep test near Navasota, Grimes County. Pure Oil Co. has locations for a series of tests in the Collegeport area, Matagorda County; first test, LeTulle 1, projected 6000 ft.

A number of other wildcats recently announced are preparing to drill or have spudded. Circle Oil Co. has spudded Sugarland Industries 1, Sugarland area, Fort Bend County. H. E. Williams' Holmes 1, southwest of Clodine field, Fort Bend County, is moving in. Prospect Drilling Co. is contractor. Earl Hankamer, Dishman & Lucas' Robertson 1, 4 miles north of Stowell field, Jefferson County, has spudded on 8500-ft contract.

A reduction from 20,150 to 19,767 barrels in the daily allowable for the Old Ocean field, Brazoria County, was ordered last week by the Texas Railroad Commission, effective February 6. The decrease was ordered because of gas-oil ratios.

Brazoria County: Stanolind Oil & Gas

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Co.'s Murchison 1, Chenango area, is drilling around 10,300 ft. The well was drilled and cored to 10,003 ft, contract depth, no shows encountered. A drill-stem test in a thin sand at 8548 ft failed to show any oil. In the Bailey's Prairie area, Glenn H. McCarthy's Munson 1 is reported to have shown a little gas while electrical log was being run to 10,397 ft.

Wilcox Trend: H. C. Cockburn & Temple Hargrove have taken over an abandoned well in the Willis area, Montgomery County, and will drill it deeper in Wilcox. Sturm & Womack originally drilled the test, Thomas Foster Est. 2, A. Peavehouse survey, to 7265 ft. Wilcox was topped at 6704 ft, and had gas and distillate shows at 6750-69 ft, and 6801-41 ft.

Newton County: Markers have been released on H. C. Cockburn & Placid Oil Co.'s Texas A. & M. College, abandoned Wilcox test, Bleakwood area: Massalina pratti, 5120 ft, McElroy, 5150 ft, Cockfield, 5856 ft, E. Yegua, 6227 ft, Cook Mountain, 6926 ft, Cyclammina, 8001 ft, Wilcox, 8666 ft, elev 76 ft, td 10,575 ft.

Harris County: Atlantic Refining Co.'s A. B. Cohn 1, west flank Esperson field, drilled through 5-ft gas section in Yegua sand around 8518 ft, attempting to blow out. Operators cored 34 ft sand, showing gas; drilling below 8620 ft. Pure Oil Co. is scheduled to spud Albanese 1, wildcat northeast of Alief, on a 9000-ft test.

COMPLETIONS

Brazoria County: Old Ocean—Harrison & Abercrombie's BRLD 12, start at sw cor Charles Breen sur, go 3817 ft ne along se l & thence at ra 1491 ft se to lcn, Oliver Jones sur, flow 404 bbls ¼-in chk, tp 750, gor 1103/1, gr 36.9, td 10,876 ft.

Chambers County: Fig Ridge—Sun Oil Co.'s C. H. Acorn 1-A, 660 ft fr n l — 660 ft fr e l HTB 105, perf 8514-39 ft 45 shots, flow 487 bbls ¼-in chk, tp 880, cp 1300, gor 640/1, td 8547 ft.

Harris County: Humble—Wilson Oil Co.'s R. E. Burt 12, 1828 ft e of cor & 160 ft fr n l 50-ac tr J. B. Stevenson sur, pump 150 bbls, 23 gr, sand topped 2260 ft, td 3251 ft.

Harris County: Joyce Richardson—Christian-Carpenter Drilling Co.'s Oscar Backen sur, 650 ft fr s l & 460 ft fr e l, 48-ac tr, gas input for recycling, td 6970 ft.

Harris County: Tomball—Humble's Rudel 6, 737 ft w of e l & 737 ft e of w l of lease, J. House sur, top sand 5586 ft, flow 29.8 bbls ¼-in chk, tp 250, cp 400, gor 278/1, td 5595 ft.

Orange County: West Port Neches—Texas Co.'s Stark 16, 669 ft w Stark 15, A. E. Hall sur, perf 3080-90 ft in sidetracked hole, flow 75 bbls ¼-in ch, tp 200, gr 21.5, gor 155/1.

San Jacinto County: Wildcat—Shell's Central Coal & Coke Co. 1, Mercy area Wilcox discovery, 990 ft fr nw & ne lines James Robinson sur, perf 8273-79 ft, flow 583 bbls ¼-in chk, 38-gr, gor 771/1, cp 1620, tp 860, td 8321.

Wharton County: Magnet—Humble's Cockburn 55, block 54, James Clement sur, tried 3 drill stem tests 6300 ft, seat slipped, abnd 6605 ft.

Wharton County: Withers—Texas Co.'s Pierce Est. B-83, 2829 ft fr se l of John Caldwell sur, perf 5539-42 ft, flow 81 bbls ¼-in chk, tp 325, cp 400, gr 25.6, gor 358/1, td 5546 ft.

WILDCAT STARTS

Austin County—Humble's Miller 1, 5 mi nw New Ulm, Industry area, 660 ft n of s l & 660 ft e of w l blk 9 on 293-ac lse, William Alley sur, lcn 9500-ft test.

Fort Bend County—Circle Oil Co. & Sam Bashara's Sugarland 1, 1005 ft fr s l & 660 ft fr e l of tract, E. Alcorn & William Stafford sur, lcn 7000-ft test. H. E. Williams' Anna E. Holmes 1, Addicks area, 660 ft fr n l 100-ac lse & 685 ft fr w bank Jones Creek, S. Isaacs sur, lcn 8000-ft test.

Jefferson County—Earl C. Hankamer's James A. Robertson 1, 3 mi sw Hamshire, and n Stowell fld, 660 ft fr w l & 660 ft s l 160-ac tr, lot 100, F. Valmore sur, lcn 8500-ft test, Harry Edwards, contractor.

Matagorda County—R. H. Parker's Gottschalk, 6 mi ne Matagorda, Big Hill area, 100 ft s of s l of Culver & Wilson 20-ac tr, Ira Ingram sur, lcn 5000-ft test.

Louisiana Gulf Coast

Wildcat Locations Steady; Fohs Testing New Sand

Drilling shows decline in proven fields while wildcat locations maintain average; Fohs Oil Co. testing new sand on Gueydan flank; Cities Service testing new levels in Jefferson Davis Parish.

Drilling: Although wildcat locations in coastal parishes have maintained a steady rate during the past few weeks, drilling in proven elds has slowed down in the similar period.

New Sand: Fohs Oil Co. is testing a shallow Miocene sand in Humble 2, north flank Gueydan field, Vermilion Parish. Perforations have been around 6810 ft in highly irregular sand conditions. Two previous tests at 7200 and 7100 ft made oil and salt water. Fohs' Humble 1 opened production on the north side August 8, 1941, flowing 600 bbls oil from Miocene at 7565-80 ft.

Pure Oil Co. extended Gueydan with Alliance Trust 11, 33-11s-1w, flowing 308 bbls through 10/64-in choke from 9850-92 ft; total depth 9955 ft.

Jefferson Davis Parish: Cities Service Oil Co. is making third production test on Lacassine Land Co. 1, gas-distillate discovery on Thornwell prospect. New test is being made at 9626-44 ft, after flowing salt water from 9854-58 ft. First perforations at 10,319-21 ft flowed approximately 2,000,000 gas daily with 28 bbls distillate.

Lake Salvador Failure: The Lake Salvador field, one of the larger reserves

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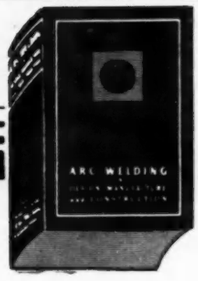

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in coastal Louisiana, received its first deep dry hole with Texas Co. abandoning State 11; total depth 11,072 ft.

COMPLETIONS

Avoyelles Parish: Wildcat—Placid Oil Co.'s Southwestern Implement Co. 1-A, 660 ft s & e nwc 19-2n-7e, no shows in Wilcox, abnd 7805 ft. Southwestern Implement Co.'s 1-B, 1980 ft e & 660 ft s nwc 11-2n-7e, no shows in Wilcox, abnd 7421 ft.

Calcasieu Parish: Wildcat—Union of California's Matilda Gray Est. 1, Moss Lake area, 2310 ft fr n & 1650 ft fr e l 4-11s-9w, abnd 10,015 ft; drilled to 10,401 in sidetracked hole.

Cameron Parish: Pecan Lake—Superior Oil Co.'s Miami Corp. 3-B, 1650 ft w & 330 ft s nec 32-14s-3w, ran log 10,995 ft, abnd 11,020 ft.

Evangeline Parish: Ville Platte—Continental's W. L. Tate 12, begin s cor Tate 39-ac tr, thence 41 deg w alg swl 2053 ft, thence n 49 deg e 480 ft to lcn, 1-4s-2e, perf 10,115-125 ft in Wilcox, flow 240 bbls 14/64-in chk, tp 1750, td 10,225 ft.

Plaquemines Parish: West Bay—Gulf's J. G. Timolat 6-B, 1760 ft w & 440 ft n of sec 26-22s-30e, perf 7296-7306 ft, flow 245 bbls 5/32-in chk, tp 960, td 7416 ft.

Rapides Parish: Wildcat—Carter Oil Co.'s State Catahoula Lake 1-B, 3300 ft n & 1980 ft w sec 32-6n-3e, Wilcox 2873 ft, abnd 5755 ft.

St. Charles Parish: Lake Salvador—Texas Co's State-Lake Salvador 11-347, 15,670 ft n & 15,470 w nwc 26-16s-22e, perf 10,462-66 ft, oil and salt water, perf 10,900-925 ft, 28 stands oil & 13 stands salt water on drill stem, abnd 11,072 ft.

St. Charles Parish: Paradis—Texas Co.'s LLE-Paradis 17, 4638 ft s & 1995 ft w nec 7-14s-20e, perf 10,155-160 ft, reperf 10,160-170 ft, flowed 552 bbls 3/16-in chk, tp 1875 ft, td 10,425 ft.

St. Landry Parish: Port Barre—William Helis' S. W. Futral 1, 6330 ft n 29 deg e fr swc sec 20, salt 5695 ft, plugged back & sidetracked 5375 ft, abnd 6020 ft.

St. Martin Parish: Anse la Butte—Haynes B. Ownby Drilling Co.'s J. Martin 1, 180 ft n & 140 ft w swc 71-9s-5w, sand 1774 ft, abnd 1794 ft.

St. Mary Parish: Bayou Sale—Atlantic Refining Co.'s St. Mary Land Co. 2, begin nec sec 41, go 2865 ft w alg line township 17s, thence s 1050 ft to lcn in 41-17s-9e, perf 10,255-61 ft, flow 240 bbls ¼-in chk, tp 1575, to 11,348 ft. Humble's Marin 2, 1000 ft n of Marin 1 discovery, 15-16s-9e, perf 10,116-181 ft, flowed 357 bbls 5/32-in chk, tp 1700, td 10,252 ft.

Vermilion Parish: Erath—Phillips Petroleum Co.'s Caldwell, n of production on w side field, 1812 ft fr nw & 1685 ft fr sw l 41-13s-4e, td 11,324 ft, plugged back & sidetracked at 10,570 ft, abnd 11,984 ft.

WILDCAT STARTS

Cameron Parish—Superior's Miami Corp. 1, Lake Misere area, 330 ft s & w of ne cor 34-13s-5w, company rig, deep test, lcn.

Livingston Parish—Danciger Refineries' Dendinger 1, Tickfaw area, fr swc 37-8s-7e, go 513 ft n 84 deg e, thence 400 ft n 6 deg w to lcn in 37-8s-7e.

Terrebonne Parish—Humble's Continental Land & Fur Co. 1, Pake Penchant area, c se ne 23-18s-12e, company rig, lcn.

North Louisiana

Testing of Smackover at North Lisbon Delayed

Holes in the casing near top of hole delayed testing of Smackover lime in North Louisiana's deepest test, Union Producing Co.'s McDonald 1, C SW 13-21n-5w, North Lisbon, Claiborne Parish. Company spudded another 11,000-ft test half mile north in same section. H. L. Hunt's Mitchiner 1, 15-23n-7w, Claiborne wildcat, that topped Buckner at 10,500 ft, drilled and cored for top of Smackover lime below 10,924 ft.

Olla Trend: Although there is still considerable leasing in the Olla trend there has been a noticeable slackening since Christmas. The number of new producers is also now small in LaSalle Parish Wilcox fields.

COMPLETIONS

Bossier Parish: Sligo—Triangle Drlg. Co.'s Kerr Unit C-4, ne nw 24-17n-12w, perf csg 3132-42 ft, pump 30 bbls oil & 10 bbls sw daily, td 3142 ft.

Caddo Parish: Pine Island—C. L. Bland's Stiles 4, sw ne 17-21n-16w, pump 5 bbls, 1007 ft. A. R. Hancock's Carter A-1, sw sw 6-21n-15w, abnd 1766 ft. Stanolind's Dillon 148, nw se 14-21n-15w, pump 45 bbls, td 1670 ft; Lane 4, sw ne 13-21n-15w, 7 bbls oil & 60 bbls water, 1685 ft.

LaSalle Parish: Nebo—H. L. Hunt's Goodpine A-41, se ne 21-7n-3e, perf 3992-4000 ft, 157 bbls & 3 bbls sw, 4360 ft.

Sabine Parish: Pleasant Hill—Rips & Corley's Harris 1, nw ne 20-10n-12w, abnd 3190 ft.

WILDCAT STARTS

Caldwell—J. T. Parks' La. Central O&G Co. 1, se sw 6-11n-3e, mat.

Catahoula—Sinclair Prairie Oil Co.'s Tensas Delta 1, 2300 ft s & 1980 w nec 10-8n-5e, rig.

Concordia—California Co.'s Pan-American 1, Irreg Sec 16-9n-10e, mat.

Grant—Allgood Oil Co. & Johnson Burnham's Dubois 4, Irreg Sec 9-7n-4w, dr.

Arkansas

Ten Drilling at Midway; Leasing Active and Widespread

Distillate production established in lower Marine at Dorcheat; 10 tests drilling at Midway, LaFayette County; wildcat leasing in Midway trend increases.

Dorcheat: Atlantic Refining Co.'s Pinewoods B-1, C NE NE 16-18-22, Columbia County, depleted in the Smackover lime and plugged back to the Cotton Valley apparently had established commercial production in the latter horizon, first in that field. After one unsuccessful test of the Cotton Valley, operators last week perforated at 7860-75 ft with 44 shots and on drill-stem test, with ⅜-in chokes top and bottom, showed 60 ft of amber-colored distillate with 1000 pounds flowing pressure.

Midway: Ten tests were drilling and two others were ready to spud in the Midway field, LaFayette County. Five of the 10 tests drilling are operations of Barnsdall Oil Co. Other operators drilling are Arkansas Fuel Oil Co., P. R. Rutherford, J. I. Roberts, Frankel Brothers and Magnolia.

Eight miles southwest of the Midway discovery well, Mid-Continent Petroleum Co. leased 4000 acres around Section 15-15-25, and in this area Atlantic Refining Co. has a seismograph unit. Barnsdall has one southeast of the Midway well and Carter has one northeast of the well. Phillips Petroleum Co. has one in township 15, range 23. Mid-Continent Petroleum Co. has a similar unit in the same county in township 17, range 23.

Carl O'Hornet of Oklahoma has six men leasing in the "Midway trend" across Hempstead, LaFayette, and Miller counties, Arkansas, into Bowie County, Texas. In Hempstead County, Arkansas Fuel is leasing around Section 19-14-23 and M. H. Foster and M. J. Houston are taking a block around Section 16-13-23 for a Smackover lime test. Barnsdall has been negotiating with M. H. Foster for his 4000-acre block around Section 17-14-25, Hempstead County. In Little River County, Harry Briley of Texarkana leased 4500 acres around Section 21-13-27. Sinclair Prairie has a gravimeter unit working in this county. Briley also leased 3500 acres in township 13, range 29.

Others buying in the "Midway trend" are: Lion Oil Refining Co., Oliphant Oil Co., Root Petroleum Co., J. K. Wadley and John Magale.

Having plugged back to 8056 feet and tested salt water in the Cotton Valley series, Tide Water Associated Oil Co. abandoned H. Moore 1, C SW SE 29-17-24, discovery well and lone producer

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in the Patton field, LaFayette County. Old total depth was 9503 feet.

COMPLETIONS

Columbia County: Macedonia — McAlester Fuel Co.'s Brewer-Warnock 1, c s½ sw 15-18-21, elev 258 ft, flow 129 bbls 44.6-gr oil, ⅛-in chk in 18 hrs, gor 2000/1, td 8908 ft.

LaFayette County: McKamie — Carter's Hanes 2, nw 31-17-23, elev 297 ft, massive anhydrite 4405; base 4560, James sand 5080, Travis Peak 5542, Cotton Valley 7020, Buckner 8996, Smackover lime 9098, main porosity 9126, base porosity 9324 ft, perf 9275-9300 ft, flow 20 bbls hr 7/32-in, 49.7-gr, tp 2200, td 9378 ft.

Union County: Wildcat—S. G. Mitchell's Citizens Bank 1, c nw se 1-19-13, abnd 4004 ft.

Union County: Mount Holly — Atlantic's Davis B-1, c sw sw 10-17-18, elev 244 ft, Buckner 7028, Smackover 7123, gas-oil contact 7171 ft, oil-water contact 7190 ft, perf 7179-80 ft, flow 100 bbls oil, 6% sw, td 7250 ft.

Mississippi

COMPLETION

Hinds County: Jackson—E. F. Neely's Larew 1, nwc 15-5n-1e, elev 268 ft, abnd 2326 ft.

WILDCAT STARTS

Harrison County—Humble's Dantzler 1, nw ne 33-48-11w, spd.

Jackson County—H. I. Morgan's Dantzler 1, 17-5s-8w, lcn. (9000-ft test, 20,000-ac block).

Alabama

WILDCAT STARTS

Clark County—Bering Oil Co.'s Davis 1, c ne nw 14-10n-3e, lcn, 4000-ft test.

Greene County—W. E. Sistruck's Steele 1, nw nw 17-23n-1w, mat, 4000-ft hole, 5300-ac block.

California

Helm Area Outpost Flows 320 Barrels

Test staked for area southeast of Coalinga Eocene pool in Fresno County, outpost completed in Helm area and Riverdale test given encouragement; new shallow zone discovery in Devils Den area, Kern County.

Fresno County: Robert S. Lytle has staked location for a test in Guijarral Hills area, 28-20-16, three miles southeast of Coalinga Eocene area, for examination of Vaqueros and Eocene.

Amerada Petroleum Corp. has completed Weyant 5-27, 27-16-17, Helm area, flowing 320 barrels 27-gravity oil from perforated interval 8100-8110 ft. Completion is second in area and is bottomed at 8500 ft. In the Riverdale area, 26-17-19, company's Jensen 54-26 on drill-stem test with valve open 15 minutes blew gas at 14,000 mcf rate, recovery consisting of 110 ft of 38-gravity oil from bottom at 6915 ft; drilling at 6941 ft in sand and shale.

Kern County: A new shallow zone has been brought into production in the Devils Den area by E. & M. Development Co. with completion of Well No. 5, 26-25-18. Bottomed at 594 ft. Last 9 feet showed oil sand of a more definite and true character than heretofore opened in area, yielding oil of 20.5 gravity. Preparations are being made to pump.

COMPLETIONS

Fresno County: East Coalinga Eocene—Robert S. Lytle's 23-17F, 330 ft s 330 w c nw 7-20-16, flow 1805 bbls ½-in bean, 377 ft perf 7172 ft, td 7172 ft. Standard's 26-31B, 1804 ft n 1880 e swc 31-19-16, flow 2404 bbls ¾-in bean, 1050/1250 lbs, 345 ft perf 8104 ft, td 8108 ft; 52-31B, 1003 ft s 2575 w nec 31-19-16, flowed 2472 bbls ¾-in bean 850/1025 lbs, 64 ft perf 8193 ft, td 8195 ft.

Fresno County: Raisin City—Shell's Santa Ana & Fresno 31-19, 342 ft s 1591 e nwc 19-15-18, flow 214 bbls, ½-in bean, 92 ft perf 5077 ft, td 5077 ft.

Kern County: Buttonwillow—Texas' S. P. 47-15, 990 ft n 2310 e swc 15-29-24, 11,000 mcf gas, 1725 lbs shut-in, td 12,138 ft, Stevens 10,887 ft.

Kern County: Strand—Shell's Ohio A-83-12, 2021 ft s 332 w nec 12-30-25, flow 524 bbls, ¼-in choke, td 8842 ft, perf 8425-8474, 8500-8515 ft.

Los Angeles County: Castaic—Texas Co.'s Fernanco 1, 970 ft s 350 e nwc 11-4-17, swabbed mud & water on test, gray sand 6850 ft, Miocene 6650 ft, abnd 8034 ft.

Los Angeles: Del Valle—Ohio's Vasquez 2, 967 ft n 358 e swc 17-4-17, failed on swabbing test, oil streaks 5944 ft, oil sand 6203 ft, abnd 6292 ft. Standard's Sepulveda 2, sw 17-4-17, flowed 80 bbls ⅛-in bean, perf 4 holes 4890 ft, Jasper 5776 ft, td 5838 ft.

Los Angeles County: Inglewood—Jergins Oil Co.'s Howard 3, 350 ft w s line lot 3, from sec, thence 100 ft n at r/a, flow 1080 bbls, ⅛-in bean, 98 ft perf 8496 ft, Nodular 7965 ft, td 8498 ft. Standard's Vickers 2-14, 536 ft s on e lease line from nec, thence 186 ft sw at r/a, flow 1506 bbls, ½-in bean, 318 ft perf 8350 ft, td 8353 ft.

Los Angeles County: Whittier-La Habra—Union's Sansinena 13, 600 ft n 150 e swc 30-2-10, pump 10 bbls, 365 ft perf 3538 ft, td 4143 ft.

Los Angeles County: Wilmington—Charles H. Harper and Bob Kidner's No. 1, 234 ft n 140 w c/l Opp & Mahar, pump 130 bbls, 326 ft perf 3458 ft, td 3460 ft. Petramont Oil Co.'s Wilmington 6, 465 ft n 130 e c/l L & Bayview, pump 175 bbls, perf 3041-3160, 3198-3290, 3500-3600, 3670-3725 ft, td 3735 ft. Slosson, Cooper & Brain's Banning 2, 100 ft s 100 e sec Denni & Lakme sts, pump 162 bbls, 395 ft perf 3603 ft, td 3605 ft.

Santa Barbara County: Santa Maria Valley—R. R. Bush's Wylie 4, 330 ft n 990 w sec 25-10-34, pump 675 bbls, 581 ft perf 4914 ft, td 4917 ft. Pacific Western's Hobbs 9, 962 ft n 1989 w sec 21-10-34, pump 310 bbls, 441 ft perf 4684 ft, td 4917 ft.

Ventura County: Bardsdale—Palma Oil Co.'s Elkins 1, 752 ft s 410 w e¼ c se 8-3-19, abnd Sespe shale 3057 ft.

Ventura County: Ventura Avenue—Shell's Taylor 145, 2884 ft s 5458 w c/l No. 11, 146 bbls gas lift, perf 7642-7723, 7763-7975, 8011-8096 ft, td 8100 ft.

OLD WELL REDRILLED

Los Angeles County: Dominguez—R. E. Havenstrite's Larronde 4, 714 ft s c/l Avalon from n property line, flow 88 bbls ½-in choke, 82 ft perf 7190 ft, otd 7636 ft, plugged 6201 ft, redrilled 7191 ft.

WILDCAT STARTS

Fresno County—Robert S. Lytle's 68-28F, 28-20-16, grading, Guijarral Hills. General's Comm. Eight, 21-17-19, grading, Riverdale.

Santa Barbara County—Century Oil Co.'s Hall 1, 34-4-25, dr 625 ft, Carpinteria area.

Michigan

Expect Work Pickup By Middle of Month

Completions gain with indications of pickup in drilling by mid-February.

Wildcats: Delayed at 3131 ft since late December by bad roads, Shakespear Associate's City of Cadillac 1, Section 35-23n-10w, Wexford County, resumed drilling.

Earl H. Gromer's Barnard 1, SW SE NE 33-1n-14w, Allegan County, logged Traverse lime objective at 1277 ft and shut down at 1279 to test free oil show.

Tamblyn Development Co.'s Channells 1, NW SW SE 32-2n-11w, Allegan County, abandoned at 1584 ft, after acidizing with 1000 gallons acid and bringing in water. Well had showed free oil in the top of Traverse.

Reed City: Ten to 15 starts for Reed City pool expected within 10 days in development program on south end of the field where C. L. Maguire recently completed Riggs 1, C N½ NW NW 6-17n-5w, Osceola County, for 260 bbls hour natural in Monroe lime.

Deep Tests: Producers Committee's Riddering 1, Section 30-7n-12w, Kent County, first deep well in the Walker

field, was cased at 5161 ft for deeper drilling. Test logged water in top of St. Peter sand, 5122-27 ft.

First bottom-hole pressure tests obtained by Gulf Refining Co. on Bateson 1, Section 2-14n-4e, Bay County, state's deepest well, showed bottom hole pressure of 5113 lbs at plugback depth of 7850 ft; total depth 10,447 ft.

COMPLETIONS

Allegan County: Hopkins—Muskegon Dev. Co.'s Knorr 3, ne sw sw 18-3n-12w, acid, Traverse 1605-08 ft, flow 180 bbls oil 19½ hrs, 1610 ft. Perry, Gould & Cross' Schafer 5, nw se sw 18-3n-12w, acid Traverse 1627-30 ft, 125 bbls, 1634 ft.

Allegan County: Wildcats—Roy Wetmore's Oetman 1, ne ne ne 29-3n-15w, Traverse 1414 ft, Monroe 1750 ft, abnd 1790 ft. C. W. Cook's Mol 1, sw sw sw 30-2n-11w, Traverse 1600 ft, abnd 1618 ft. Tamblyn Dev. Co.'s Channells 1, nw sw se 32-2n-11w, Traverse 1583 ft, so 1586 ft, water 1592 ft, abnd 1598 ft.

Clare County: Winterfield — Rowmor & Hughe's Wyman 4, c e½ sw se 29-20n-6w, flow 490 bbls oil, ½-in, Dundee 3710-12, td 3715 ft. Taggart Bros. Co.'s Barhite-McClain 94, c se 30-20n-6w, 6,210,000 gas, Stray sand, td 1362 ft.

Isabella County: Chippewa—Daily Crude Oil Co.'s Davis 1, nw sw nw 3-14n-3w, Traverse 2889-3076 ft, acid, flow 810 bbls, 3080 ft.

Missaukee County: Wildcat — Turner Pet. Corp.'s Kaminga 1, c n½ ne nw 26-21n-7w, Dundee 3907 ft, abnd 3931 ft.

Osceola County: Reed City—Ohio's Campbell A1, c s½ sw nw 19-18n-10w, Traverse 2950-60 ft, flow 224 bbls oil 2 hrs, td 2962 ft. Heilman 3, c s½ nw se 19-18n-10w, flow 170 bbls 1st hr, Monroe 3546-90 ft, td 3593 ft. Pure's Dunn 4, c n½ nw se 20-18n-10w, flow 234 bbls 10 hrs, Monroe 3556 ft, td 3556 ft; Richard's A3, c s½ sw nw 20-18n-10w, flow 292 bbls 1st hr, Monroe 3600-28 ft, td 3628 ft.

Roscommon County: Headquarters—Ohio & Hilliard's State A2, c n½ se ne 33-21n-3w, flow 325 bbls 1st hr, Traverse 3332-3419 ft, td 3419 ft. E. V. Hilliard's State A2, c n½ se se 34-21n-3w, flow 210 bbls 1st hr natural, Traverse, td 3380 ft.

WILDCAT START

Wexford County—Bolger & Wright's McNitt 1, c s½ sw se, 22-22n-9w, lcn.

Ohio

COMPLETIONS

Ashland County—Ohio Fuel, Firestone 1, dry, 2963 ft.

Athens County—Bern Oil & Gas Co., Denison 1, dry, 975 ft, Wallace et al, Dorr 1, 0.05 gas, 1390 ft.

Coshocton County—Fred W. Abbott et al, Ashcraft & Bryan 1, 65 bbls, 3104 ft.

Fayette County—Greensboro Gas Co., Teggert 1, dry, 2591 ft.

Holmes County—H. E. Perkins, Fee 1, 20 bbls, 3132 ft.

Jackson County—McIntosh & Grim, Carson & Staats 1, 5.85 gas, 5201 ft. United Carbon Co., Curry 1, 3.33 gas, 5065 ft. Godfrey L. Cabot, Lee 1, 4.93 gas 5150 ft.

Kanawha County—Godfrey L. Cabot, Inc., Pauley 1, 9.9 gas, 5264 ft. Columbian Carbon Co., Central Trust Co. 1, 1.05 gas, 5010 ft.

Licking County—Moore Bros., Brown 1, dry, 2750 ft. Ohio Fuel, Shaw 2, 1.95 gas, 2544 ft. Fred W. Abbott et al, Caldwell 2, 40 bbls, 3060 ft.

Medina County—Harry Dempsey, Frank 1, 2 bbls & 3.0 gas, 3185 ft. Snyder et al, New 1, 0.3 gas, 3480 ft. H. C. Bishop, Lisy 1, 15 bbls, 3096 ft.

Meigs County—Ohio Fuel, Spaulding 1, 0.34 gas, 437 ft. Proffitt et al, Harris &.Tanthorey 1, 0.2 gas, 3290 ft. H. B. Walker & Co., Person 1, 0.1 gas, 1650 ft, H. M. Nelson, Smith 1, dry, 980 ft.

Monroe County—C. E. English & Son et al, Scott et al 2, 1 bbl 1536 ft, H. B. Walker & Co., W. S. English 15, ½ bbl, 1432 ft.

Muskingum County—Ohio Fuel, Staker 1, 1.0 gas 4227 ft, Wasson & Co. et al, Howell 1, 15 bbls 4105 ft, Atha Co., Thompson 3, 15 bbls, 3580 ft.

Noble County—Fassett Oil Co., Hayes 8, 2 bbls, 243 ft, H. G. Clymer, Archer 1, dry, 1680 ft.

Perry County—Berea Oil & Gas Co., Weaver 1, 3 bbls, 1187 ft, Corning Prod. Co., Dennis heirs 1, dry, 3725 ft, Palm Oil Corp., Inc. et al, Cooper 1, 95 bbls & 2.0 gas, 2835 ft. Preston Oil, Thompson 1, 155 bbls, 3283 ft, B. Davis et al, Starkey 5, dry, 2760 ft.

Tuscarawas County—Brendel Prod. Co., Williamson 1, dry, 1200 ft, East Ohio Gas, Bailey 1, 0.45 gas, 4973 ft.

Washington County—H. F. McTaggert, 0.42 gas, 1388 ft, Interstate Gas Co., Roberts 2, 0.05 gas, 1270 ft, Orndoff & Burt, Rudolph 1, 0.28 gas, 930 ft, Harry Binegar, Fee 1, dry, 1000 ft.

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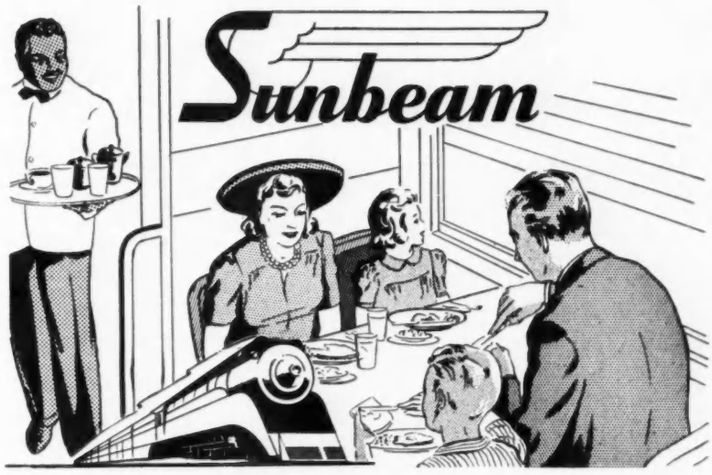

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New York

COMPLETIONS

Allegany County—Messer Oil Co., Vosburg farm, Bolivar, 5 bbls, 1360 ft. R. B. Moore et al, Curtis farm, Bolivar, 7 bbls, 1223 ft. W. J. Richardson Est. 3, Gadsby farm, Bolivar, 8 bbls, 1529 ft. Messer Oil Co., Shaner farm, Bolivar, 12 bbls, 1446 ft. Friendship Oil Co. et al, Ingalls-Clark farm, Bolivar, 5 bbls, 1288 ft. Ebenezer Oil Co., Ketchum farm, Scio, 5 bbls, 1150 ft. Curt Oil Co., Williams farm, Alma, 7 bbls, 1376 ft. C. E. White, Gordon farm, Scio, 6 bbls, 1047 ft. J. P. Herrick 1, Howe farm, Bolivar, 6 bbls, 1419 ft. O. D. Underwood et al, McDivitt farm, Bolivar, 8 bbls, 1378 ft. L. H. Thornton et al, Smith farm, Willing, 5 bbls, 1237 ft. Short & Gordon et al, Richmond farm, Willing, 6 bbls, 1132 ft. Bliven Hill Oil Co., Rogers farm, Amity, 7 bbls, 843 ft. Scio Oil & Gas Co., Fuller farm, Amity, 6 bbls, 770 ft. H. W. Patterson et al, Fuller farm, Amity, 5 bbls, 744 ft. L. & D. Oil Co., Browning farm, Scio, 4 bbls, 552 ft. William O'Connor Est., Hall farm, Genesee, 5 bbls, 1390 ft. Bradley Prod. Corp., Coats farm, Wirt, 6 bbls, 1277 ft. Sawnet Oil Co., Merritt farm, Genesee, 5 bbls, 1434 ft. New York Oil Co., Brown farm, Bolivar, 5 bbls, 1352 ft.

INTAKE WELLS

Messer Oil Co., Vosburg farm, Bolivar, 1366 ft. Vosburg Oil Co., Green farm, Bolivar, 1324 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, 1345 ft. Producers Oil Corp., Keller-Scott farm, Wirt, 1037 ft. A. G. Maitland Est., McCutcheon Lot, Alma, 1088 ft. Bradley Prod. Corp., Rolls farm, Alma, 1270 ft. Bradley Prod. Corp., Rolls farm, Alma, 1264 ft. The Otsquago Corp., Pike farm, Alma, 1412 ft. Bradley Prod. Corp., Fitz-Carrol farm, Bolivar, 1347 ft. L. H. Thornton et al, Brown farm, Alma, 1271 ft. Rico Oil Co., Alger farm, Scio, 749 ft. Messer Oil Co., Beever farm, Wellsville, 947 ft.

Pennsylvania

COMPLETIONS

Armstrong County—J. K. Sharp, Manners 2 0.11 gas, 1450 ft, Peoples Nat. Gas, Cagley 1, 0.21 gas, 2858 ft.
Greene County—Carnegie Natural Gas, Leightner 2, 0.02 gas, 3319 ft, Mfgrs. Light & Heat Co., Stewart 1, 2.23 gas, 2165 ft.
Indiana County—T. W. Phillips, Streams & Sonner 1, 0.01 gas, 3489 ft.
Washington County—Mfgr. Light & Heat Co., Winnett 1, 0.31 gas, 2680 ft.
Westmoreland County—Peoples Natural Gas, Westmoreland Mining Co., 0.1 gas, 3557 ft.

West Virginia

COMPLETIONS

Boone County—Hope Natural, Arbogas 7662 dry, 4813 ft, Chambers & Stowers 8577, 0.16 gas, 1900 ft.
Calhoun County—Coral Poling, Robinson 2, 5 bbls, 1985 ft.
Clay County—Pittsburgh & W. Va., Elk River Coal & Land Co. 7795, 2.0 gas, 2209 ft.
Gilmer County—F. G. Bish, Messenger 4, gas, 1680 ft.
Jackson County—G. L. Cabot, Inc., McLean heirs 13, 1.92 gas, 1566 ft, Haye Oil & Gas Co., Hill 2, dry, 4986 ft, Joe Rubin, Smith 1, 1.76 gas, 5045 ft, United Carbon Co., Green 973, 7.56 gas, 5232 ft.
Kanawha County—Godfrey L. Cabot, Inc., Putnam Co., 0.62 gas, 5138 ft, Owens, Libby Owens, Spillman 1, 0.13 gas, 3739 ft, Columbian Carbon Co., Haynes 1, 18.11 gas, 5336 ft, Jones 1, 1.39 gas, 5137 ft, Atkinson 1, 3.18 gas, 1651 ft. Poca Fox Oil & Gas Co., Haynes 1, 6.76 gas, 5239 ft.
Lewis County—McCall Drilling, Starcher 1, 15 bbls & 0.13 gas, 1784 ft.
Lincoln County—Hope Natural Gas Co., Chapman 8578, 0.16 gas, 2302 ft.
Putnam County—Summit Gas Co., Wood 2, 0.83 gas, 1521 ft, Godfrey L. Cabot, Putnam Co. 24, 0.92 gas, 5205 ft.
Roane County—American Oil Dev. Co., Riley 2, 4 bbls, 1840 ft.
Taylor County—Pittsburgh & W. Va. Gas Co., Ables 1, dry, 1138 ft.
Wayne County—Owens, Libby, Owens, Ferguson 1, 0.07 gas, 3024 ft.

OLD WELLS DRILLED DEEPER

Boone County—Cameron Oil & Gas, Smoot 1, 0.3 gas, 4538 ft.
Braxton County—Pittsburgh & W. Va., Howell 7401, 0.76 gas, from 1453 to 2059 ft.
Lincoln County—Cambridge Gas Co., Mullins 1, 0.64 gas, from 2215 to 3566 ft.

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MEN IN THE INDUSTRY'S NEWS

BRYAN W. PAYNE, president of Iowa-Payne Oil Company, Tyler, is president of East Texas Salt Water Disposal Corporation, a $2,000,000 concern recently formed by operators in the East Texas field to acquire existing water-injection plants and to drill the necessary input wells to accomodate the field's water production. Don R. Gladney, Magnolia Petroleum Company, and John G. Pew, Sun Oil Company, Dallas, were elected vice president and secretary-treasurer, respectively. Board of directors includes above officers and E. H. Blum, The Atlantic Refining Company; Joe Zeppa, Delta Drilling Company; and Dave Frame, Humble Oil & Refining Company.

Payne has operated in Texas fields as drilling contractor and producer for more than 20 years. He has actively supported conservation of natural resources, and was a leader among operators seeking orderly proration when production curb was placed upon the East Texas field. He is a native of South Dakota, and resided at Tacoma, Washington, during his 'teen age. He withdrew from the University of Washington during World War I to enlist in the air service, and when discharged January, 1919, while serving as an instructor at Lone Oak, Arkansas, cast his lot in the oil boom then underway at Wichita Falls. Later acquiring a drilling rig, he operated in North and West Central Texas, opening the Echo pool in latter district, then moved into the East Texas field at the start of development in 1930.

CHARLES L. HARDING, former manager of the marketing division of Shell Oil Company's legal department in New York, has been appointed counsel and acting director in charge of OPC District No. 1. He will act as legal adviser to the industry committees in the district, and will have headquarters in the OPC offices in New York.

WILLIAM H. McINTYRE, JR., is president, Henry D. Moyle, vice president, Chester Davis, secretary-treasurer, and Joseph Minton, general manager of Wasatch Oil Producing Company, a recently formed affiliate of Wasatch Refining Company, which has purchased extensive producing properties in Wyoming, including the North LaBarge unit area embracing 6000 acres, semi-developed with 6 producing wells, from North LaBarge Oil Co. The latter company retains its leases in south sector of the field. Wasatch purchased Albany County Rex Lake leases embracing some 200 proved acres with one producing well and 2 shut-in producers from Fred Goodstien of Casper and Joseph Minton of LaBarge; leases covering Sheep Creek field, Fremont County, with two producers from Harold Nutting of Denver; and 1200 acres of wildcat acreage covering the North Piney structure, Sublette County. Wasatch plans extensive drilling campaign at LaBarge this spring, also testing of North Piney acreage.

E. C. EDWARDS, field engineer for Honolulu Oil Corporation in the Slaughter field, West Texas, joined the Army Air Corps as aviation cadet, the latter part of January.

MANSE ALLEN, junior engineer with Honolulu Oil Corporation in the Slaughter area of West Texas has recently enlisted in the Army Air Corps as aviation cadet.

A. B. STEVENS, professor of petroleum engineering at Texas A. & M. College, recently was recalled to active service as a major in the United States Coast Artillery, attached to the Barrage Balloon School at Camp Tyson, Tennessee. Stevens was in the service from February, 1941, to September, 1941, but was released to continue his teaching.

E. F. PEQUIGNOT, Gulf Refining Company, was elected chief of the Michigan Oil Scouts Association recently. Pequignot, former vice president, had been acting president since the resignation of William Schulz, Cities Service Oil Company, to devote full time to geology and land departments. Harold Howell. Muskegon Development Company, was elected vice president, and Dean C. Shackelford, Pure Oil Company, was reelected secretary-treasurer.

DR. FRANCIS P. SHEPARD, professor of the department of geology, University of Illinois, discussed "Oceanographic Investigations of Submarine Canyons" at a special meeting of the South Texas Geological Society held in San Antonio February 7.

ALVIN C. HOPE, reserve officer in the Army and member of the drilling concern of Rowan & Hope, Inc., San Antonio, has been called into active duty.

HARRY LEYENDECKER, chief scout for Tide Water Associated Oil Company, Houston, has been granted a leave of absence to join the District 3 Petroleum Coordinator's Office with headquarters at Houston. He will serve as senior petroleum development analyst. R. C. Powless will succeed Leyendecker as chief scout.

WILLIAM L. HORNER, formerly secretary-treasurer of Core Laboratories, Inc., located at the laboratory of the company at 5700 Navigation Boulevard, Houston, and supervising the company's Gulf Coast activities, has been promoted to vice president and has opened downtown Houston offices in the Niels Esperson Building, to provide consultation service on oil and gas reservoir characteristics and performance.

E. E. ROBBINS, since 1931 with Oil Well Supply Company as manager of sales for the Tulsa area, has been appointed director of materials for District 2, OPC. The appointment was announced by Deputy Coordinator Ralph K. Davies. His assignment will be to assist suppliers and the oil industry in the solution of priorities and other problems related to the procurement of equipment. He has had wide experience in the equipment business. In 1927 he became vice president in charge of sales for the C. F. Camp Company, Tulsa. His headquarters are at 120 South LaSalle Street, Chicago.

PAUL WEAVER of Gulf Oil Corporation addressed the Houston Geological Society February 5 on "The Formation of Salt Deposits in General and of Potash Salts in Particular from Sea Water."

DR. J. RUD NIELSEN, University of Oklahoma, spoke before the Engineers Club of Tulsa at a dinner meeting on the subject of "Practical Applications of Spectroscopy in the Petroleum Industry." Nielsen diverged from his announced subject to explain absorption spectra, and the means of recording infra-red lines.

A. D. COCHRAN, oil man of Okmulgee, Oklahoma, has accepted the presidency of the Creek Nation Area Council of the Boy Scouts of America.

FRANCIS P. SHEPPARD, University of Illinois, spoke before Tulsa Geological Society on "Oceanographic Investigations of Submarine Canyons."

CLARENCE GLASGOW, National Tank Company, spoke before the Seminole production chapter of API on crude gravities.

FRANCIS N. BOSCO, production engineer formerly with Stanolind Oil & Gas Company at Tulsa, now is with the North Basin Pools Engineering Committee, with headquarters in Midland, Texas.

JOHN G. PEW, Sun Oil Company, has been elected president of the Dallas Petroleum Club, succeeding Harry S. Moss. Ray Hubbard and Ernest L. Wilson were chosen vice president and secretary-treasurer, respectively.

JOHN H. TEER, formerly with Layne & Bowler Company, Houston, will manage Hughes Tool Company's new gun plant being constructed in Houston. The plant will cover 128 acres, and will employ 1200 to 1500 men when operation commences some time in the fall.

GEORGE M. SNODGRASS has been appointed manager of the Eastern Sales Division of The Sawyer Electrical Manufacturing Company, Los Angeles, with

headquarters at 2110 Terminal Tower, Cleveland, Ohio. A wholly-owned subsidiary of A. O. Smith Corporation, Milwaukee, Wisconsin, Sawyer manufactures a line of special electric motors for machine tools as well as rotors and stators for built-in applications.

W. D. MOORER is president and Jack Hendricks is plant manager of Braden Steel Corporation's plant at Tulsa, a subsidiary company recently acquired by Moorlane Company of Tulsa. Moorlane Company was organized in 1929 to distribute equipment to the oil industry.

Braden Steel Corporation will continue to be operated as an independent unit retaining all present personnel and management, supplemented by the management and facilities of Moorlane Company. Other officers are S. D. Hunt, vice president; H. S. Medlin, secretary-treasurer; James C. Pharr, assistant secretary; L. T. True, assistant treasurer. J. G. Mathews is Tulsa sales engineer. The company will maintain a sales office in Houston at 229 Shell Building, with R. W. Rogers as resident manager. Moorlane has branch offices and warehouses at Kansas City, Missouri, and Amarillo, Texas. These offices also will represent Braden Steel Corporation.

W. D. Moorer

Jack Hendricks

Squeaks from the Bull Wheel

Life Like

"Do you think you can make a good portrait of my wife?"

"My friend, I can make it so life-like you'll jump every time you see it."

Cured

The over-cautious visitor, with several imaginary diseases, was registering at the resort hotel.

"But is this a really healthy place?" he asked the desk clerk for the third time.

"Absolutely," smiled the clerk. "This season a man was carried in here on a stretcher. After two weeks he ran away without paying his bill."

N. B.

Fellows who drive with one hand are usually headed for a church aisle. Some will walk and some will be carried down it.

Don't Tell

"Who was that pretty little thing I saw you with last night?"

"Will you promise not to tell my wife?"

"Surely, I promise."

"Well, it was my wife."

Eye Opener

Customs Officer (finding a bottle of whiskey): "I thought you said you had nothing but old clothes in this trunk?"

Tourist: "And I was right. That's my nightcap!"

Explained

"She has a very magnetic personality."

"She ought to. Every stitch she has on is charged."

Changed Relations

A group of British were touring Moscow. The Russians were taking them about, showing the sights. "This," they said, pointing to an impressive highway, "is Anthony Eden boulevard—formerly Goering road"; and again, pointing to an impressive edifice, "That is the Winston Churchill building—formerly Adolf Hitler palace."

So the British, deeply impressed, took leave of their guests, and in departing, said: "Farewell, comrades — formerly So-and-Sos."

Taciturnity

Grandpappy Morgan, hillbilly of the Ozarks, had wandered into the woods and failed to return for supper, so young Tolliver was sent to look for him. He found him standing in the bushes.

"Gettin' dark, Grandpap," the tot ventured.

"Yep."

"Supper time, Grandpap."

"Yep."

"Airn't you hungry?"

"Yep."

"Wal, airn't you coming home?"

"Nope."

"Why airn't ye?"

"Standin' in a b'ar trap."

Fiction

I wonder what this writer means by "Gems of thought."

Oh, probably something like that jewelry you're always promising to buy me.

Peculiarity

A man who stuttered was asked why he did so.

"It's my p-p-p-peculiarity," he answered. "Everybody has s-s-s-some -p-p-p-peculiarity."

"I don't have any."

"Don't y-y-y-you s-s-stir your c-c-c-coffee with your r-r-r-right hand?"

"Yes."

"That's your p-p-p-peculiarity. Most p-p-p-people use a s-s-s-spoon!"

Vintage 1900

Rural Customer: "I don't want any of them crackers. Folks tell me the mice is always runnin' over 'em."

Grocer: "Tain't so. Why the cat sleeps in the barrel every night."

1903

"Hello! Is this the City Bridge Department?"

"Yes. What can we do for you?"

"How many points do you get for a little slam?"

Frankie and Winnie

"Once a friend of mine and I agreed that it would be helpful for each of us to tell the other all our faults."

"How did it work?"

"We haven't spoken for five years."

Suffering Uncle

"I hear your boy has a gift for recitation."

"Yes indeed, he has. His uncle says that all he needs to finish him off is a course of electrocution."

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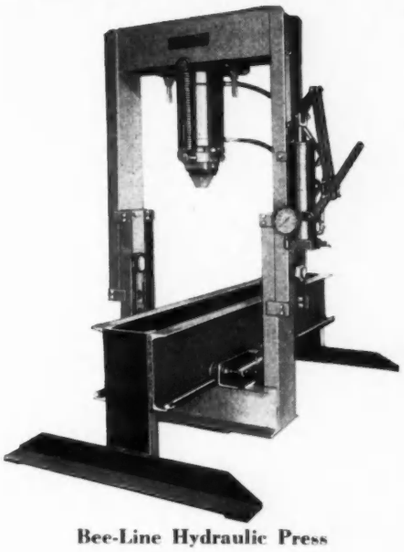
Welder
PROGRESSIVE WELDER COMPANY

Progressive Welder Company, E. Outer Drive, Detroit, Michigan, has announced development of low-cost installation for welding together ends of strips. The process consists of two simple air-operated, series connected guns for spot welding, a notched bar to locate welds, and a control handle to move the gun along, the entire assembly being supported from an I-beam section above which is located the welding transformer. To weld strips together, the operator moves the gun to the first notch. This trips a switch, causing welds to be made. The gun is pulled along to the second notch, causing another pair of welds to be made, etc., for as many welds as needed for the specific strip width. A button is provided on the control handle to prevent closing of the welding circuit when the gun is returned to starting position.

Hydraulic Press
BEE-LINE COMPANY

The Bee-Line Company, Davenport, Iowa, has announced a new 125-ton hydraulic press straightening and special tool equipment, designed for the reclamation and conservation of bent, kinked and distorted oil pipes up to 14 inches O.D. by .500 wall.



Bee-Line Hydraulic Press

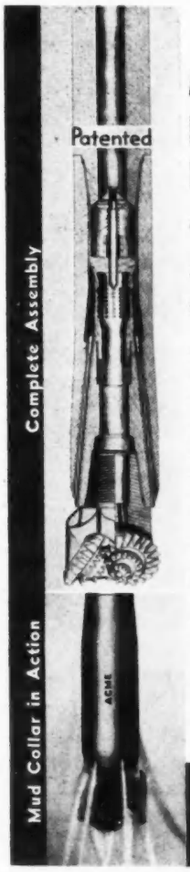
The press is mounted on a movable roller bearing carriage which permits application of pressure at any point in an 84 x 34-inch bed. The jack carriage can be raised or lowered 16 inches with a minimum space between the ram and the bed of 2 inches and a maximum space of 28 inches. The ram travel is 10 inches. The jack features three speeds—high, medium and low. Overall dimensions of the complete press are: length 8 feet, width 4 feet 8 inches, weight 4000 pounds.

Bearings

Gatke Corporation, 228 North LaSalle Street, Chicago, has issued a non-metallic bearing catalog, describing Gatke moulded fabric bearings of various types for grease or oil lubrication, water lubrication, acid-resisting service, and some unlubricated applications. Included are operating characteristics of the various types with performance results on typical applications.

Pumps

Oil Well Supply Company, Dallas, Texas, has issued two bulletins: "Oilwell" No. 612-P power slush pump, and bulletin U5-142, "Oilwell" TC-23 and TC-33 twin-crank pumping units. The TC-23 and TC-33 units are new additions to the "Oilwell" line. A unique



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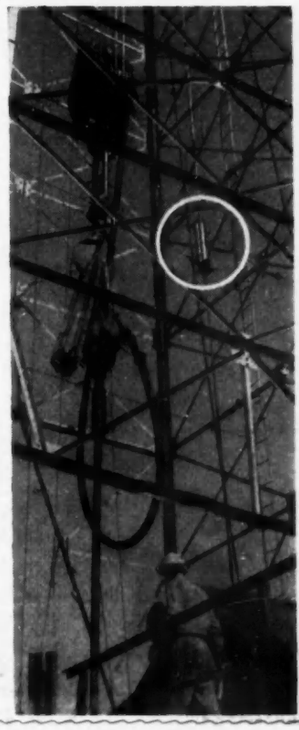
Wire Line Guides at $2 per well

A Corpus Christi drilling operator reports the drilling of 17 wells, using a Patterson-Ballagh Wire Line Guide and required only one set of refills. This averaged about $2.00 per well for Guide service. Another Texas operator has used one of these Guides for 3 years, and is now using his second set of refills. His average cost is only $2.00 per month for Guide service.



PATTERSON-BALLAGH Corporation
Los Angeles Houston
New York City

PATTERSON-BALLAGH WIRE LINE GUIDES

feature of both units is the provision for increasing the maximum stroke length from 54 inches to 64½ inches to suit particular well conditions.

Welding

The Lincoln Electric Company, Cleveland, Ohio, has issued a new edition of the blue-print-reading book. The book is concisely written in simple, practical language for easy understanding. It is intended that welders, mechanics and others will be enabled, by a few hours spare-time study, to learn print reading which otherwise might take many months to learn.

Heating Units, Controls

Electric heating units and controls for industrial application involving the heating of liquids, solids or air are described in a recently revised 38-page catalog announced by Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania. Specifications, descriptions, ratings and prices of the several types of heaters are covered.

Transmissions

Ideal Commutator Dresser Company, Sycamore, Illinois, has issued a 52-page catalog, giving a quick index source of reference for complete data on Ideal variable-speed pulleys, variable-speed transmissions, automatic tension control motor base. It gives sizes, rated capacities, design and operating details where applicable, and how installed.

Scraper

LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa, has issued a booklet describing new, high-speed earth moving equipment, a combination outfit, the "Caterpillar" Diesel DW-10 tractor and LaPlant-Choate CW-10 "Carrimor" scraper.

The booklet tells of the history and development of the scraper and describes the many design features, the bowl, hydraulic system, wheels and brakes. Included also is a section on the TW-10 "Carrimor" scraper which is the same machine with front wheel assembly for use with track-type "Caterpillar" tractors.

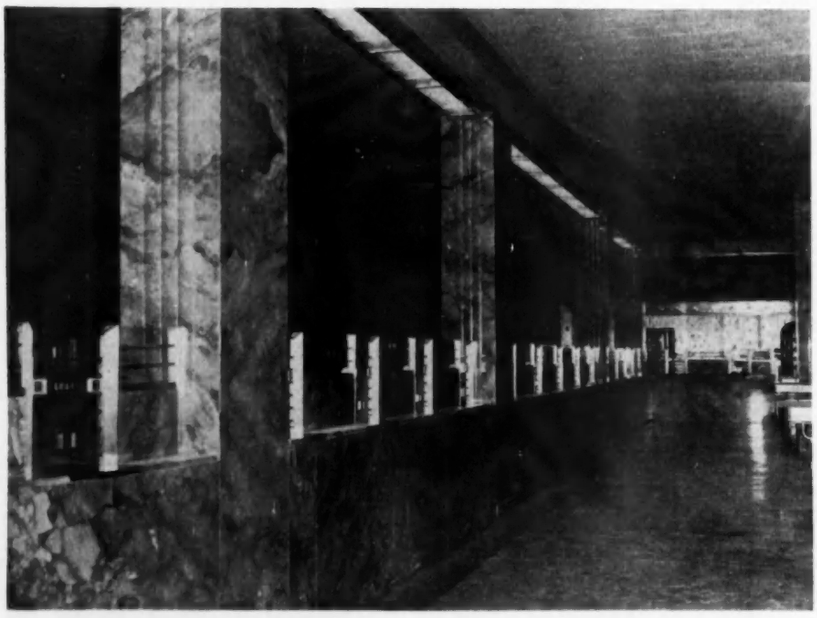
Macklin Company, Jackson, Michigan, manufacturer of grinding wheels, recently completed installation of a continuous kiln (shown above) which will increase its production of vitrified wheels by 30 percent.

Pumps, Hoists

Sterling Machinery Corporation, Kansas City, Missouri, has issued bulletin 5 illustrating and describing the engineering features of self-priming centrifugal pumps, hoists, unitized pumping equipment and unitized power plants from 100 to 2000-watt output.

Conveyor

Chain Belt Company, Milwaukee, Wisconsin, has issued a new Rex bulk handling conveyor catalog. The catalog gives information and descriptions of Rex belt conveyors, apron conveyors and bucket elevators.



Transfer of the main office of First National Bank of Shreveport, Louisiana, to its own quarters, which during the past eight months have been completely modernized and enlarged, was made recently. Now carrying the distinction of being Louisiana's oldest bank, it was founded in 1877 as the private banking house of E. and B. Jacobs. Walter B. Jacobs, grandson of the founder, is present president. Photo shows partial view of newly modernized and enlarged quarters of the bank.

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* Indicates that detailed information on the manufacturer's products or services may be found in the 1942 edition of The Composite Catalog of Oil Field & Pipe Line Equipment.